DOCUMENT RESUME

ED 190 144 IR 008 662

AUTHOR	Lihocky, Julius, Ed.
TITLE	Exchange of Educational Information: A Means of Further Advancement of European Cooperation in the Field of Education. Proceedings of the European Colloquium: (EDICO-2, Bratislava, Czechoslovakia, July 12-15, 1977).
INSTITUTION	Slovak Pedagogical Library and Inst. of Educational Information, Bratislava (Czechoslovakia).
PUB DATE	Jul 77
NOTE	527p.: Best copy available.
EDRS PRICE	MF02/PC22 Plus Postage.
DESCRIPTORS	*Cooperative Programs: Educational Development: *Educational Innovation: *Information Dissemination: Information Networks: *Information Systems: *International Programs
IDENTIFIERS	Educational Information Centers

ABSTRACT

The goal of this second EDICO colloquium was to evaluate the development of innovation processes and information systems in UNESCO member countries, including the identification of the most significant areas for the exchange of educational information, and the discussion of possibilities for joint action in the future. The mission of EDICO-2 was to contribute to the creation of a better network of educational information centers, to cooperate in information exchange, and to the solution of common problems of a theoretical or practical nature. The 57 reports and discussion papers included may be divided into two types: those presenting experience gained in building information systems and developing information activities concerned with extending international contacts in the area of education and schooling set up by individual countries since the first colloquium in 1974, and papers describing the present state of educational information and assessing possibilities for further national and international development. Participants included 25 invited specialists from 21 countries and observers from UNESCO, Council for Mutual Assistance, Council of Europe 20, and institutions and nongovernmental organizations. (Author/RAA)

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EDICO-2

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EXCHANGE OF EDUCATIONAL INFORMATION

a means of further advancement of European cooperation in the field of education

PROCEEDINGS OF THE EUROPEAN COLLOQUIUM

EDICO-2

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BRATISLAVA 12-15 JULY 1977

IR008662

EXCHANGE OF EDUCATIONAL INFORMATION - A MEANS OF FURTHER ADVANCEMENT OF EUROPEAN COOPERATION IN THE FIELD OF EDUCATION

Proceedings of the European colloquium EDICO- 2

Issued by the Slovak Pedagogical Library and Institute
of Educational Information in 1978.
Editor-in-chief Július Lihocký. Cover and lay-out Dana
Zárubová.
Printed by the Slovak Pedagogical Library and Institute
of Educational Information.
First edition.
Number of copies printed 600.

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Introduction

The significance of information at any stage of the development of human society is undeniable. In the period of scientific and technological revolution, however, the function of information is extremely important, this fact being reflected in the information quantity, quality and utilization. The above fact is evident not only in the area of science and technology, but also in the social practice. Educational activities link up to all the three above areas.

In order to be effective, education requires an appropriate amount of ready and adequate information which may be provided only by means of a good information system. The idea of organizing international colloquia on this subject is therefore very valuable.

The EDICO-2 colloquium follows up the EDICO-1 first colloquium, held in Prague in 1974. The EDICO-2 has the objective of evaluating the development of innovation processes and information systems, outlining the most significant areas for the exchange of educational information and discussing possibilities for joint action in the future. The mission of EDICO-2 is to contribute to the creation of a better network of educational information centres, to the cooperation in information exchange and in solution of common problems of theoretical and practical nature.

The organizers of EDICO-2 wish its outcomes contribute to the implementation of the Helsinki document in the area of education and schooling.

Reports and discussion papers included into this volume may be divided into two groups:

1. Papers presenting experience gained in building information systems and developing information activities, dealing with extending international contacts in the area of education and schooling set up by individual countries since the first colloquium.

2. Papers informing on the present state of educational information and assessing possibilities of its further development at national and international levels.

The constructive character of this colloquium guarantees that the improved quality of information will result in better education and signalizes ways for achieving mutual understanding and fruitful cooperation among European countries.

PROGRAMME OF THE COLLOQUIUM

WORKING COMMITTEE

EDITORIAL BOARD

PROGRAMME OF THE COLLOQUIUM

12th July 1977 /Tuesday/

8.30 - 9.00 a. m.	Registration
9.00 - 9.30 a. m.	Opening, welcome address and approval of the Agenda, election of the Colloquium bodies; J. Volf, Department Director of the Ministry of Education of the C.S.R.
Chairman	JAROSLAV KUGLER
9.30 - 10.30 a. m.	Address by J. Kiss, Deputy Minister of Education of the S.S.R.
10.00 - 10.30 a. m.	Coffee break
10.30 - 11.30 a. m.	Paper "On some questions concerning the international exchange of scientific-educational information and innovation processes associated with the development of Czechoslovak information system in the area of education" presented by J. Lihocký, Director of the Institute of Educational Information of the S.S.R. Ministry of Education
11.30 - 12.00 a. m.	Paper presented by L. Pernig, Director of UNESCO-BIE
12.00 - 2.00 p. m.	Lunch break

Chairman	**WILLEM DE REGT**
2.00 - 4.00 p. m.	Papers presented by delegates of member countries and discussion
4.00 - 4.30 p. m.	Coffee break
Chairman	**FERENC ARATÓ**
4.30 - 6.30 p. m.	Papers presented by delegates of member countries and discussion

13th July 1977 /Wednesday/

Chairman	**HORST ROCHE**
9.00 - 10.30 a. m.	Papers presented by delegates of member countries and discussion
10.30 - 11.00 a. m.	Coffee break
Chairman	**PETR S. SOLNTSEV**
11.00 a. m. - 1.30 p. m.	Papers presented by delegates of member countries and discussion
1.30 - 3.00 p. m.	Lunch break
3.00 - 5.00 p. m.	Visit to the Comenius University Computing Centre at Mlynská dolina; demonstration of an information subsystem on the student
5.00 p. m.	Free programme

14th July 1977 /Thursday/

Chairman	TED BRANDHORST
9.00 - 10.30 a. m.	Papers presented by delegates of member countries and discussion
10.30 - 11.00 a. m.	Coffee break
Chairman	ERCÜMENT KURAN
11.00 a. m. - 12.30 p. m.	Discussion
12.30 p. m. - 2.00 p. m.	Lunch break
Chairman	VIOLETTA MIRTCHEVA
2.00 - 5.00 p. m.	Discussion
5.00 - 5.30 p. m.	Break
Chairman	JÚLIUS LIHOCKÝ
5.30 - 6.30 p. m.	Assessment and adoption of documents
6.30 p. m.	Conclusion of the Colloquium

WORKING COMMITTEE OF THE EDICO-2 COLLOQUIUM

1. Leo FERNIG	UNESCO-BIE Director
2. Willem de REGT	Director of The Hague Central Documentation Department
3. Violetta MIRTCHEVA	Scientific Secretary of T. Samodumov Institute for Pedagogical Research of Sofia
4. Ferenc ARATÓ	Director General of the National Pedagogical Library and Museum of Budapest
5. Ted BRANDHORST	Director of ERIC - Processing and Reference Facility, Maryland
6. Ercümend KURAN	Professor of Faculty of Social Sciences and Management of the Hacettepe University, Ankara
7. Horst ROCHE	Secretariat of the Permanent Conference of the FRG Ministers of Education and Culture, Bonn

---

Draft Editorial Board for drafting the colloquium final documents:

1. V. ARANSKY	Deputy Director of Research Institut of General Pedagogy of the USSR, Academy of Educational Sciences, Moscow

2. Aida FURTADO	Head of the UNESCO-BIE Department of Documentation, Geneva
3. Raina TODOROVA	Director of Information and Documentation Centre of the T. Samodumov Institute for Pedagogical Research, Sofia
4. Hans BENNEWITZ	Centre for Educational Information GDR Academy of Educational Sciences, Berlin
5. Kjell V. ROTNES	Director of University Library, Oslo
6. Elin EKMAN	Head of National Psychological and Pedagogical Library, Stockholm

WELCOME ADDRESSES

Jozef Kiss

Deputy Minister of Education of the Slovak Socialist Republic, Bratislava

---

Ladies and Gentlemen, Dear Guests,

Allow me to greet you most sincerely, in behalf of the Minister of Education of the Slovak Socialist Republic Prof. Ing. Juraj Buša, CSc., in behalf of the Minister of Education of the Czech Socialist Republic, Associate Professor Milan Vondruška, CSc., and in my behalf, at the European Colloquium EDICO-2, held in Bratislava, the capital of Slovakia.

I wish to greet and welcome particularly the Director of the International Office for Education, Science and Culture, Mr. Leo Fernig as well as foreign representatives of national educational information centres, representatives of regional centres of the C.M.E.A. and of the Council of Europe, representatives of the UNESCO organizations, of the Czechoslovak central political and State institutions and other scientists and specialists.

We were very pleased to learn about the decision to organize this significant European colloquium on questions related to the development of information systems for the needs of educational systems of UNESCO member countries. We consider it an acknowledgement of our country's contribution to solving the problems in this area.

Proceedings of the scientific EDICO-2 colloquium follow up those of the first EDICO-1 colloquium held in Prague in 1974. They aim at extending the framework for mutual information of participants concerning the present state of information centres in individual UNESCO member countries, evaluating the development of innovation processes and information systems, determining the most significant areas for the exchange of educational information and discussing the possibilities for future joint action. EDICO-2 is expected to contribute to setting up a better network of educational information centres, to promoting their cooperation in the information exchange and in the solution of common problems of theoretical and practical nature.

In Czechoslovakia, the problems concerning information are considered to be extremely significant. Information exchange and development of information systems are both the source and the prerequisite for the promotion of education. Needs of information users can be satisfied only by means of an information system built on the principle of a complex and integrate system of the totality of scientific, technical and socioeconomic information providing rapidly and readily relevant data.

The solution of problems related to information exchange and international cooperation constitutes one of the ways of implementing conclusions of the Helsinki Conference on Security and Cooperation in Europe; improving mutual understanding it contributes to the peaceful coexistence of countries having different social systems. The readiness, expressed by representatives of thirty-five countries in Helsinki, to collaborate in the area of information exchange on the basis of mutual advantages, without intervening into internal political, economic and other affairs, implies in practice the search for adequate ways of promoting the exchange of knowledge and experience gained in the area of education.

Any such meeting makes for the peaceful future of the mankind and is very useful also to the struggle of oppressed nations for liberty and independence as well as to progressive developments in the world.

The strengthening of peace and security, mutually advantageous collaboration between countries having different social systems - these developments have positive implications for the thinking and actions of the majority of mankind accepting and implementing the programme of peace. The lives of peoples experience a decisive turning point - the alleviation of international tensions, the invigoration of the international atmosphere, and the putting through of the principles of peaceful coexistence. This means that the task of ensuring a lasting peace is realistic and accomplishable. We are also glad of the positive changes effected in Europe in this respect. This meeting should therefore lead to the consolidation of good friendly relationships between countries through a fruitful cooperation in the sphere of education.

Friendship and cooperation among countries help reach the basic objective of social and economic policy of our country - by means of steady development and high effectiveness of social production and quality of work to provide for the material and spiritual needs of the population and to improve their living and social conditions.

In fulfilling the above demanding tasks our society has to devote great attention to the education of the young generation. It is not only an expression of the society's concern for these tasks, but also the expression of the very substance of the socialist system, of its humanistic character. All schools and other establishments of the Czechoslovak educational system are public, accessible to any citizen under equal conditions, regardless of nationality, sex, property, and social origin. The education in all schools is provided free of charge, as guaranteed by the Czechoslovak Constitution. This situation contains all the necessary prerequisites for an allround development of citizens' abilities, and for their efforts to obtain the highest possible education. Our society is thus expressing its interest in shaping a highly educated, cultural, creative and socially committed citizen who is both the user and the creator of values he develops for an advanced socialist society.

We eliminated discrimination in the access to education by any social stratum or group. We have successfully solved problems related to differences in educational levels of inhabitants of individual regions and these differences have been levelled in all regions and in both national republics.

In the past period, the education in our country underwent a complicated, but successful development, which was at any given moment inspired by the best revolutionary and democratic traditions. The high level of Czechoslovak educational system was reflected in the quality of workers trained for individual sectors of national economy. Presently we have been developing a new system of education foreseeing the future needs of our society.

Czechoslovak schools are built on the basis of a unified democratic educational system. They enable all the young people and adults having completed elementary education to get also the secondary and higher education, to reach the highest level of qualification, and to obtain scientific degrees. Our citizen has wide opportunities for asserting his talents, abilities and qualification received during schooling in the national economy. The humanistic character of our school system is reflected also in the care provided to physically and mentally handicapped children and young people. Today, any such child may be placed in a special school and according to its abilities participate later on in the life of our society. The concern of the State for material equipment of schools and educational facilities has substantially improved. The high level of education is, to a great degree, accounted for by the introduction of university studies for all teachers of elementary and secondary schools.

Education provided free of charge, low-cost boarding and cheap meals as well as other social measures reflect the great concern of our State for the education of young people.

The development of education in Slovakia is a proof of efforts of the Communist Party of Czechoslovakia and of the socialist society as such to develop material and spiritual values in all the regions of the Czechoslovak Socialist Republic and justifies the correctness of the current development.

We are happy to note that the development of education had been particularly remarkable in Slovakia. In comparing the present educational level in Slovakia with the situation in the past we have to mention that while in 1930 one inhabitant in twelve was illiterate, today 90 % of elementary school-leavers continue their study in secondary schools. The total number of students at Slovak universities in 1937 was only 2,100 - compared to almost fifty thousand regular students attending universities and colleges in the school year 1976/77.

In comparison to the situation of thirty years ago, the number of classes and the number of students multiplied more than threefold.

The following data characterize the development of qualification during the past 15-year period: while the total number of workers has multiplied by 1.4, that of college-trained specialists has multiplied by more than 3 times. We succeeded in substantially changing the structure of professionally trained workers.

Basic changes and aims of our future efforts are directed towards a wider implementation of scientific and technological achievements, towards effecting qualitative changes in the character of the social division of labour and towards increasing further the educational level of all young people and adults. In a historically short period we have to solve several problems in a comprehensive manner, as the requirements for education and qualification of people will be ever increasing.

On the basis of the programme outlined by the 14th Congress of Communist Party of Czechoslovakia in the area of education, State authorities gave their approval to the draft proposal for further development of the Czechoslovak educational system. Its main objective consists in promoting the development of the democratic education, modernizing its contents and methods at all the levels of this system and thus creating prerequisites for steady increases in the level of general education and qualification. This document represents a long-term programme for the development of education in Czechoslovakia. The implementation of this project will imply substantial changes and measures concerning contents, organization and other components of the educational system in the forthcoming period.

The above measures result particularly from the complex and demanding character of tasks connected with the next stage of construction of an advanced socialist society. It is characterized above all by a more rapid and wider introduction of scientific and technological achievements into all the spheres of human activity, qualitative changes in the work contents, systematic orientation towards the utilization of intensifying growth factors. Qualification and education occupy a prominent position among the latter.

In the framework of a further extension and intensification of the democratic character of our educational system we are setting up conditions enabling us to introduce gradually complete secondary education with school leaving examination for all young people, and thus bring university studies nearer to a steadily increasing number of young people.

In our consideration, the main task of the future development of the Czechoslovak educational system consists in the modernization of contents and methods of educational activity, improvements in its quality, systematic efforts at uniting the educational system with production practice and life of the society. The new conception of education contents in the schools of all types and levels will result in training people better suited to meet demanding and under conditions of scientific and technological revolution rapidly changing conditions and requirements of the practical life. An open, dynamic character of the contents of education provided at all the levels will guarantee direct linkage of our educational system to life and work, flexible and rapid response to newly arising needs.

The implementation of the project for future development of the Czechoslovak educational system involves the introduction, during the next ten to fifteen years, of the compulsory education of ten years for all the young people and complete secondary education with school-leaving examination for most young people.

The most conspicuous changes will be induced by the implementation of the project for training the working class. We devote great attention to assuring a high level training for future workers. This is an inevitable requirement of the future historical period when objective reasons will bring about considerable changes in requirements as regards qualification and quality of workers' work, when many workers' vocations will demand secondary or complete secondary education. Therefore, the project implies the introduction of such contents into training future workers in individual fields of study and of such proportions between general and vocational education that correspond, in basic directions, to those of graduates from other secondary schools.

The optimal overall duration of regular study leading to the completion of secondary education with school-leaving examination is, in our opinion, twelve years.

The number of university and college students, especially those studying at technical colleges, will be also increasing at a rapid rate.

The necessity for permanent education of graduates from schools of all levels and types is expressed, in the project, through the incorporation into education system of adult education as one of its organic components.

In solving all the basic problems of our school system we take into account experience of and development of education in advanced countries.

In order to effect the proposed changes we have already implemented measures leading to appropriate modifications in training and education of teachers. We unify the professional preparation of teachers of general-education subjects at the second stage of elementary schools and at secondary schools. We provided for further qualification improvements of teachers in the framework of a unified system of further training for educational workers. It involves introduction of post-secondary and post-graduate study, functional and cyclical training of managerial workers, etc. into practice.

I am convinced that also other European countries are much concerned about the education of the young generation. Each country makes its specific contribution to the treasury of education by offering something it considers to be very important and necessary. We shall try to find common paths for enriching our present knowledge in this area, for making education serve to all the people. In spite of differences in social systems we may exchange successfully information from various fields of education and schooling, to the benefit of all the European countries, respecting the principle of sovereignty of individual countries.

Such is also the mission of our colloquium. Allow me to express my conviction that in our joint meetings we shall find a common language, that the negotiations will be constructive and that we shall agree on measures to assure efficient information and further improvements in the quality of education for the young generation. I am sure that the outcomes of our colloquium will contribute to the implementation of the joint declaration adopted by the Helsinki Conference.

May I be permitted to wish you many successes and creative ideas as well as smooth proceedings of the Colloquium.

Jiří Volf
Director, Ministry of Education of the Czech Socialist
Republic, Prague

Ladies and Gentlemen, participants in
the second international EDICO-2 Colloquium,

Allow me to welcome you most warmly on behalf of the Preparatory Committee and organisers of this Colloquium.

We were very pleased to note that almost all the participants of the first Colloquium held in Prague in 1974 decided to participate also in the second one, and that our ranks are extended by other specialists, representatives of their countries.

The EDICO Colloquium is thus acquiring the status of a significant international project in the area of scientifico-pedagogical information, and may be considered to be one of those events reflecting efforts of nations and their peaceful and progressive forces aimed at implementing the conclusions adopted at the Helsinki Conference on Security and Cooperation in Europe.

We may observe, that in spite of serious difficulties, obstacles and actions of certain forces opposed to peace, the spirit of Helsinki containing the basic ideas of pease and peaceful cooperation among nations, have been gaining ground victoriously in all spheres of life.

In the span of two years that have elapsed since the adoption of the Helsinki Final Act, international relations in Europe were affected by a number of positive events oriented to peaceful coexistence: thus, the cooperation among countries in the fields of economy, science and technology was considerably extended, and the conditions were created for gaining a better insight into cultural values of European nations.

Achievements reached in the implementation of the Helsinki Final Act in all the spheres of life of European nations give full justice to Helsinki negotiations and to the viability and prospects of their conclusions.

The resolution of European peoples - to live in pease - may be fulfilled only on the basis of realistic preconditions of peaceful cooperation and containing elements reflecting interests of an overwhelming majority of people.

In Helsinki the representatives of thirty-five countries expressed their belief, that an extensive international exchange of cultural values and cooperation in the field of science lead to better mutual knowledge of nations, and consequently to their better understanding, to the invigoration of mutual respect, and to respect for their national independence and sovereignty.

The Czechoslovak Socialist Republic as one of the signataries of the Helsinki Final Act, always faithful to ideas of peace, friendship and creative cooperation among nations, has been ever since its adoption consequently putting into practice the conclusions of the Act in its internal and foreign policies. We do not want to miss ahy opportunity to contribute to the successful implementation of the above document. For this reason, our country accepted the UNESCO proposition to organise the EDICO-2 Colloquium, meeting of leading representatives of national centres for educational information of the UNESCO European member countries and of other invited guests.

Throughout the preparation of the Colloquium we were intent upon creating the most favourable conditions for making the outcomes of our meeting contribute to the implementation of the Helsinki Final Act in the area of education. In this resolution we enjoy the support and interest of European countries having different political and economic systems, unanimously expressed in Helsinki, in cooperation in the area of information exchange on the basis of mutual advantages without interference in internal, political, economic or other affairs of individual countries. This statement is confirmed also by the fact that the invitation to participate in the Colloquium was accepted by 23 UNESCO member countries and by seven international information centres.

I am very honoured that the organizing committee entrusted me with the task of opening the Colloquium proceedings.

We are greatly pleased that we may greet most cordially Mr. Leo Fernig, Director of UNESCO-BIE, Mrs. Aida Furtado, and Mr. Roberts, UNESCO representative.

We consider that the participation of international organisations reflects the acknowledgement of the significance of our Colloquium.

I have therefore the honour to welcome

Yakov Mikhailovich Berger, representative of MISON, the International Social Science Information System,

Mr. E. von Mutius, Head of the Documentation Centre of the Council of Europe, with residence in Strasbourg,

Mr. Vladimír Štefánik, representative of the International Federation for Documentation FID, with residence in The Hague,

Mrs. Hana Procházková, Deputy Director of the European Information Centre for In-Service Education of Teachers at Charles University in Prague,

Mr. Ivan Savický, Head of the Documentation Department of the European Centre for Leisure and Education in Prague.

I should like to greet cordially also representatives of the UNESCO member countries participating in the present Colloquium:

Austria:	Mr. Gerhard Silvestri, Head of Department for Documentation and Libraries of the Ministry of Education and Art,
Belgium:	Mr. René Vandevelde, Inspector General, Ministry of Education and Culture, Mr. Jean Dupont, Ministry of Education and Culture,
Bulgaria:	Mrs. Violetta Mirtcheva, Scientific Secretary of T. Samodumov Institute for Pedagogical Research, Mrs. Raina Todorova, Director of T. Samodumov Institute for Pedagogical Research,

Cyprus:	Mr. M. Matsis, Inspector for Secondary Schools, Ministry of Education,
Denmark:	Mr. Robert Hellner, Head of the National Pedagogical Library,
Finland:	Prof. Dr. Oiva K. Kyöstiö, Director of the Institute for Educational Research,
German Democratic Republic:	Dr. Hans Bennewitz, Head of Division of the Centre for Pedagogical Information and Documentation, Dr. Hannelore Berg, Head of Division of the Centre for Pedagogical Information and Documentation,
Federal Republic of Germany:	Dr. Horst Roche, Secretariat of the Permanent Conference of FRG Ministers of Education and Culture,
Hungary:	Dr. Ferenc Arató, Director General of the National Pedagogical Library,
Netherlands:	Mr. Willem de Regt, Ministry of Education and Science, Director of the Central Docomentation Department,
Norway:	Mr. Kjell Vasdal Rotnes, Director of the University Library,
Poland:	Mrs. Barbara Wieczorek, Pedagogical Research Institute
Romania:	Mr. Constantin Matuşoiu, Central Pedagogical Library,

Spain:	Mr. Joaquin Tena Artigas, National Centre for Education Research and Development,
Sweden:	Mrs. Elin Ekman, National Library for Psychology and Education,
Turkey:	Prof. Dr. Ercümend Kuran, Faculty of Social Sciences and Management of the Hacettepe University,
Great Britain:	Mr. Jim Davies, M.A., National Foundation for Educational Research in England and Wales,
U.S.A.:	Mr. Ted Brandhorst, Director of the ERIC Processing and Reference Facility,
U.S.S.R.:	Mr. V. S. Aransky, Deputy Director of the Research Institute of General Pedagogics, Mr. Y. M. Berger, Department Manager of the Institute for Scientific Information in Social Sciences of the Soviet Academy,
Ukrainian S.S.R.:	Mr. V. E. Bykov, Director of the Central Computing Centre of the Ministry of Education at the Kiev State Pedagogical Institute,
Byelorussian S.S.R.:	Mr. P. S. Solntsev, Senior Research Worker of the Pedagogical Research Institute of the Ministry of Education of the Byelorussian S.S.R.

I sincerely welcome representatives of Czechoslovak information institutions, organisations for scientific research and guests of the Colloquium.

Allow me to express my hope that the Colloquium will fulfil, professionally and socially, all your expectations and that at its closing session we may all be convinced that it constitutes another meaningful project on the path towards reaching humanistic objectives of education.

Thereby I am opening the EDICO-2 Colloquium.

However, my mission as member of the Organizing Committee has not yet been completed.

At the registration you were all presented a draft programme for individual days worked out by the Organizing Committee. The Committee and the organizers suggest, contrary to the original draft programme, the following changes:

We were assuming originally that the activities of the Colloquium will be divided into two topical areas, namely exchange of experience concerning the establishment of information systems in the member countries on the one hand, and assessment of possibilities for the development of international exchange of educational information and cooperation on the other hand. Papers submitted previously to the Organizing Committee by the delegates suggest that both the above problems are dealt with simultaneously. We are therefore proposing to read the papers prepared by representatives of UNESCO-BIE and the Czechoslovak Socialist Republic at the very beginning of the Colloquium, enabling thus the delegates to express their views on the given problems either separately, or jointly, as desired.

After having considered the number of delegates wishing to take part in the discussion, the Organizing Committee suggests that the representative of each delegation should be given twenty minutes to read his or her contributing paper and the domestic delegates, having lost less time travelling, ten minutes.

In view of the significance of the Colloquium agenda we suggest to work exclusively in the plenum. You will have the opportunity to ask questions after each paper has been read. The questions will be answered by respective speakers at the conclusion of individual parts of the Colloquium.

Are there any remarks or suggestions concerning the agenda? If not, I consider the draft agenda to be adopted.

You were also given the proposals concerning the Working Presidium of the Colloquium and that concerning the Drafting Group. Both proposals are based on the previous dealings with the Colloquium participants and previous collaboration with them.

The Organizing Committee therefore asks the following delegates to take place in the Working Presidium:

Mrs. Violetta Mirtcheva, Scientific Secretary of T. Samodumov Institute for Pedagogical Research of Sofia,

Mr. Leo Fernig, Director of the UNESCO-BIE,

Mr. Willem de Regt, Director of the Central Documentation Service in The Hague, Mr. Ferenc Arató, Director General of the National Pedagogical Library and Museum in Budapest,

Mr. Ted Brandhorst, Director of the ERIC Processing and Reference Facility of Maryland,

Mr. Ercümend Kuran, Professor at the Faculty of Social Sciences and Management of the Hacettepe University in Ankara,

Mr. Horst Roche, Secretariat of the Permanen Conference of FRG Ministers of Education and Culture in Bonn,

Mr. Peter Solntsev, Senior Research Worker of the Pedagogical Research Institute of the Ministry of Education of the Byelorussian S.S.R.,

Mr. Július Lihocký, Director of the Institute of Educational Information of the Ministry of Education of the Slovak S.R.,

Mr. Jaroslav Kugler, Director of the Institute of Educational Information of the Ministry of Education of the Czech S.R.

Are there any remarks or amendments concerning the Working Presidium? If not, we consider the proposal accepted.

As you know, the outcomes of our Colloquium are to be issued in two documents. For drafting these documents we propose the following Drafting Group:

Mrs. Aida Furtado, Head of the Documentation Department of UNESCO-BIE in Geneva,

Mrs. Raina Todorova, Director of the Information and Documentation Centre at the T. Samodumov Institute for Pedagogical Research in Sofia,

Mrs. Elin Ekman, Head of the National Library for Psychology and Education in Stockholm, Mr. V. S. Aransky, Deputy Director of the Research Institute of General Pedagogics of the Academy of Pedagogical Sciences of the U.S.S.R in Moscow,

Mr. Hans Bennewitz, Management of Pedagogical Information of the Academy of Educational Sciences of the G.D.R. in Berlin,

Mr. Kjell V. Rotnes, Director of the University Library in Oslo,

Mrs. Růžena Klečánková , Deputy Director of the Institute of Educational Information in Prague.

Are there any other suggestions concerning the Drafting Group? If not, we consider the proposal accepted.

Thank you for the unanimous adoption of our proposals and for the confidence you have thus expressed in the Organising Committee and by this I consider the proceedings of the Colloquium for started.

CHIEF PAPER

Some questions concerning the international exchange of educational information and innovation processes related to the development of information system for education in the Czechoslovak Socialist Republic

Július Lihocký
Director of the Institute of Educational Information of the Ministry of Education of the Slovak Socialist Republic, Bratislava

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The EDICO-2 colloquium, this significant international event in the area of educational information, ranks among those events through which peaceful and progressive forces of Europe manifest their commitment to the Final Act of the 1975 Helsinki Conference.

Throughout the preparation of the colloquiun we were intent on creating favourable conditions so that our meeting could contribute to the implementation of the Helsinki document in the area of education. We were inspired by the willingness of 35 countries, unanimously expressed in Helsinki, and by the interest of European countries having different social systems, to cooperate in the area of information exchange on the basis of mutual benefit and without interfering with internal political, economical or other affairs of individual countries.

Particularly for us, information workers in the area of education, the Helsinki document implies the obligation to seek for and bring to life effective ways and means for the international exchange of findings and experience from our field, and thus contribute to better understanding, confidence, friendship, good neighbourly relations among nations, to strengthening peace and security. We direct our activities towards educating the young generation of European countries, U.S.A. and Canada in the spirit of principles anchored in the Helsinki document, to mutual understanding, confidence and cooperation.

The EDICO-2 colloquium should base its programmatic intentions and objectives primarily on the Helsinki document and, at the same time, on the outcomes of the first EDICO colloquium held in Prague in 1974.

The progress achieved in the area of educational information in individual countries of Europe, makes it possible to go beyond the informative character of the first colloquium programme and to set out, particularly with respect to the Helsinki document, more demanding objectives. Their implementation should contribute, in a more meaningful and systematic manner, to the development of education in individual countries.

In formulating the EDICO-2 programme and objectives that we are about to list, we took into consideration also results of the questionnaires sent in by individual member countries to the UNESCO-BIE as well as suggestions concerning the solution of problems related to the international exchange of educational information and cooperation between national information systems.

Consequently, we have reached the conclusion that the colloquium should concentrate particularly on the following questions:

1. To make possible the exchange of the latest experience concerning the innovation processes in the development of information systems and information activity in education in individual countries.
2. To get acquainted with the present situation in the area of international exchange of educational information and to evaluate possibilities of its further development.
3. To assess and determine preferential areas for the exchange of educational information, its organization, forms and methods.

We all know that the 36th session of the International Conference on Education will be held on August 30 through September 8 of this year in Geneva. In accordance with resolution 1.51 adopted at the 19th session of the UNESCO General Conference, the main topic for the above conference is going to be "The problem of information at the national and international level which is posed by the improvement of educational systems".

We were asked by the UNESCO-BIE management to contribute with the outcomes of the EDICO-2, particularly as regards the generalization of European experience from the area of educational information, development of information systems in education and international cooperation, to the discussion of the main topic of the 36th session of the International Conference on Education.

The work carried out at the colloquium should result in certain conclusions and adoption of final documents. The above-mentioned orientation of the agenda leads us to the conviction that one of these documents should be directed towards the activities of national information systems of the UNESCO European member countries, and that it should constitute the so-called minimum programme of their information activity and cooperation during the period preceding the EDICO-3.

The second document - final report from the colloquium - would contain recommendations to the 36th session of the International Conference on Education with emphasis on the application of European experience gained in setting up information systems in education in other regions of the world.

The objectives set out for the EDICO-2 colloquium are demanding. The question therefore arises, whether we are in the position of successfully carrying the colloquium through?

We dare ascertain that the present composition of colloquium participants, despite the fact that it does not include all the European UNESCO member countries, guarantees political, educational and professional prerequisites for successful discussion and fulfillment of given objectives.

This statement is justified both by the high professional level of the first colloquium and by considerable progress achieved in individual countries in the area of educational information and establishment of information systems in education. We gained separately, but also as members of collective international organisations such as the Council for Mutual Economic Assistance and the Council of Europe, much experience concerning the international exchange of information.

One of the characteristics of information systems in the present period of scientific and technological revolution leading, inter alia, to the rapid growth of information, is also the tendency towards the international cooperation and development of international systems, particularly those for scientific and technological information. This tendency reflects the fact that the international circulation is inherent in the communication of professional information as manifested in the organized forms of international cooperation and the establishment of information systems.

Moreover - given the existing differentiation and integration of individual scientific disciplines - the international division of labour and cooperation in the entire field of science and technology are inevitable. The circulation of professional information constitutes an integrating factor in the complicated relationships existing in the international division of labour and cooperation in science and technology. These relationships may be confirmed by a number of examples.

Let us take the example of Czechoslovakia - a rather small country as regards its extent and number of inhabitants, but an advanced one taking into consideration its industrial development and system of scientific and technological information. The Czechoslovak VTEI information system /scientific, technological and economic information/ is able by itself to collect, process and make available about 50 % of the world information stock. The international cooperation, particularly in the framework of C.M.E.A., enables us to increase this share to 80 %.

The above fact proves that the international cooperation in the area of scientific and technological information and the constitution of international information system correspond, besides reflecting an objective tendency, to the interests of the development of individual national information systems. This progressive tendency is valid, though not to such degree as in production, also for the area of education.

There are, naturally, also certain negative factors influencing the international cooperation in exchanging educational information and information systems in education. The decisive one, according to many member countries, is the absence of an international system of educational information.

Other negative factors hampering the integration of information systems, especially at the international level, are e.g. language barriers and internal structures of information systems, information languages, avilable machine equipment and others.

The situation in solving the problem of information in education has much improved since the EDICO-1 colloquium. The activity of national information systems in most countries was extended. The analysis of the present situation in national systems reveals efforts of competent authorities and scientific establishments to solve promptly the problem of putting necessary information through to all those taking part in the process of education. At the same time, it reflects considerable variations in approaching the establishment of information system, its function, organizational and institutional structure. These differences result from national conditions and specificities.

In most European countries, the solution of information problem is based on the unified information policy. This policy provides the basis for the construction of a unified information system and a national information centre, in addition to other information centres. National information centres represent, from the institutional point of view, national centres for the collection, processing and mediation of educational information and they also provide methodical guidance and coordination of activities of other centres for educational information.

National information centres are established particularly as parts of nation-wide institutions for scientific research, pedagogical libraries or as independent organizations.

In several countries there is no national information centre and its function is taken over by a number of regional information centres.

Activities of national information centres are focused mainly on the collection, classification, processing and provision of educational information furnished primarily to users in scientific research and partly to managerial workers. Only a limited number of national information centres build a comprehensive information fund, unify and integrate all the types of educational information on a national scale and process educational as well as socio-economic information needed for the management of research, planning and forecasting in the area of education.

Experience accumulated by most member countries suggests that national information centres have proved their efficiency for the information systems for education. Through their methodical guidance the centres are able to provide for the unified character of the system on a national as well as international scale.

Also the international information exchange appears to be richer and more systematic in those cases where it is effected through the intermediary of national information centres.

The establishment of national information systems and development of international cooperation and exchange of educational information are positively affected by the UNESCO activities, namely by the adoption of the programme for the constitution of the world system of scientific information UNISIST in 1971, adoption of principles for building national information systems NATIS in 1974, and particularly specific and systematic information activities of the UNESCO-BIE.

The UNISIST has not yet acquired the status of world information system and its establishment will require further international efforts over a longer period. Towards reaching this objective a significant role is played by the establishment of international information systems and centres, such as the information system built at the C.M.E.A. /MISON system/ and at the Council of Europe /EUDISED/. Realistic and efficient possibilities for mutual collaboration are arising also between the above systems.

In the surveys carried out among member countries, the UNESCO-BIE activities are highly appreciated in the area of mediating the information exchange, particularly as regards the comparative treatment of educational findings and experience of member countries and in the area of assistance provided in the construction of information systems in individual member countries. We all believe that at the next stage of international development of information activities the UNESCO-BIE will play a decisive role.

Member countries agree that the regular international exchange of educational information creates prerequisites for the effectiveness of innovation processes taking place in the development of national systems of education and they therefore consider it to be very important.

Proposals concerning the development of international exchange of educational information and the cooperation among information centres may be classified, according to their character and way of implementation, as belonging to one of the two stages - long-term and short-term programmes.

The long-term programme involves the task of evaluating possibilities for setting up the European information system in the area of education.

Some member countries believe that such system should be set up under the auspices of the UNESCO-BIE. The inputs would be provided by individual national and international systems and the outputs could be used equally by any user.

The system of this type may be constructed only after some basic theoretical, methodical and technical questions have been solved. For their solution, work groups consisting of representatives of national and international centres should be set up at the BIE level; results of their activities would be presented to one of the EDICO colloquia.

The above tasks, very time-consuming, call for the solution of a number of partial tasks such as the elaboration of an international multilingual dictionary, unified classification, thesauri, descriptors, common norms of transfer, forms, etc.

First of all, we should improve the existing situation in the exchange of educational information at the international level, making use of given conditions and possibilities.

According to suggestions and impulses by individual countries reflected in the questionnaires, the following issues should be given consideration:

- determination of the priority of information concerning education and school system,
- determination of organizational procedures, forms and methods of their exchange.

The questionnaire findings suggest that the order of priorities concerning areas for information exchange is given by key tasks in the sphere of school system and education in individual countries. Concerned are particularly the following areas:

- reconstruction and reform of the system of school education,
- improvement in the education system and transition to the complete secondary education,

- modernisation of the contents of school subjects,
- modernisation of teaching methods,
- improvement in the teachers' training and their continued education,
- development of the pedagogical science and more intensive introduction of findings of the pedagogical research into practice,
- innovation of the didactic technology.

Therefore, the order of preferences of areas designated for the international exchange should correspond to the above key areas which are being solved or planned to be solved by the educational authorities of individual countries.

For this reason we might, already in the immediate future, ensure that the information offered by national information systems for the international exchange include:

- basic legal measures concerning the education, organization and management of school system,
- basic pedagogical norms such as curricula /and maybe also syllabi/ of individual types of schools,
- materials concerning innovation processes and forecasts of the development of education and school system,
- findings of educational research, particularly exchange of basic pedagogical literature,
- studies from the area of management theory, oriented to the improvement and rationalization of the management of education and school system,

- studies concerning the modernisation of teaching methods and didactical aids,
- studies and reports on innovation processes taking place in national information systems.

Information materials could be offered in various forms: either in their original form of publication, or interpreted in various studies, reports and educational periodical and non-periodical literature. The negative impact of language variations might be considerably alleviated if the information materials, except original educational literature, were published in the most frequently used UN languages in Europe, namely English, Russian and French.

If our colloquium, after a careful consideration, adopts the programme of international exchange of educational information, we should gradually approach the implementation of certain measures in individual countries.

We have in mind particularly the following measures:

- to incorporate the preferred areas for the exchange of educational information into the activity plans of national information systems and centres,
- to organise information activities in the national systems and the subsequent development of these systems in such a way so as to update constantly and systematically information stock for international exchange and ensure their wide international utilisation,
- to create conditions for systematic provision to the UNESCO-BIE of information intended for international exchange.

Ladies and Gentlemen,

Allow me to briefly inform you on the progress achieved in Czechoslovakia in the solution of information problem in education since the first colloquium.

The Deputy Minister of Education of the Slovak Socialist Republic has stressed the fact that Czechoslovakia, particularly since the 14th Congress of the Communist Party of Czechoslovakia, undergoes the process of dynamic construction of an advanced socialist society, based on the maximum utilisation of achievements of the scientific and technological revolution. The scientific and technological revolution constitutes, in our national economy, a permanent, universal force accelerating the development in all the spheres of life of our society. Substantial changes taking place in the production and tecnnology result also in gradual modifications of the man's situation in the material production and in needs for improving the quality of training people for life and work under socialism.

The construction of an advanced socialist society, scientific and technological progress as well as the development of the socialist way of life bring about the necessity of confronting new requirements and needs with the existing situation in the area of education in Czechoslovakia.

The project of further development of the Czechoslovak educational system delimiting, in accordance with changing social conditions and needs, the role and social function of the school in an advanced socialist society, directs the activities of all workers in education, pedagogical science and practice, towards the attainment of the principal objective of socialist education - education of a harmonically developed personality. The preparation of young generation for work and life in the socialist society is conceived, in the framework of life-long system of education, so as to give the young people the widest possible general theoretical and polytechnic education, to develop their mental capacities, to enable them satisfying demanding requirements of the production, to teach them effective methods for acquiring dramatically changing and growing amount of knowledge and information. It aims at developing a personality highly adaptable to the work process, physically sound, politically and socially conscious, with highly human ethical, esthetic and emotional feelings.

The gradual replacement of restricted "learning for life" by a permanent, life-long study will result not only in changes of contents and structural nature in education, but also in changes concerning teaching methods and in penetration of modern technology into the educational process.

The project of the further development of Czechoslovak educational system contains, besides specific short-term tasks, also scientific forecasts of the long-term development of education in Czechoslovakia. The implementation of the project as a whole requires unprecedented development of the socialist pedagogical science in all its aspects as well as the development of auxiliary pedagogical disciplines.

It is only logical that the implementation of the project requires a substantial increase in the amount of reliable, objective and ready information for the sphere of scientific research and management of school system on the one hand, and for the educational practice on the other hand.

It calls for the rapid solution of the information problem in education and for the accelerated construction of an information system.

The analysis of the existing situation in the area of information activity has revealed that the information problem in education in our country takes the following forms:

- disparity between the increasing amount of information and capacities of the school system for its rational and ready utilization,
- disparity between syllabi and textbooks on the one hand, and needs for informing students and pupils in accordance with the present level of knowledge in the world on the other hand,
- need for completing the construction of an information system coupled with methodical, technical and personnel issues.

We have been taking these problems as well as other extraordinarily important questions concerning the complex educational organism into account ever since 1970 in designing the information system. As early as in the second Five--Year Plan, the Prague and Bratislava Institutes of Educational Information, in collaboration with the team of extramural workers, having interdisciplinary orientation, have been solving the problem of an information system in education on the basis of principles stipulated by the unified State information policy and on the basis of decisions made by the Czechoslovak Government.

As the general laws of information science have not yet been specifically worked out for the area of pedagogy, the information problem was, from the very beginning, solved at the level of theory and research as well as that of practical measures.

We carried out an extensive investigation and made an analysis into information flows, elements and components. We reevaluated information duties and possibilities of individual bodies and institutions concerned. We also examined information needs of users in individual groups.

On the basis of research and analysis of the given situation and available literature we were aiming particularly at delimiting the notion of information system in education, determining its contents, extent and characteristics.

We have reached the conclusion that the information system in the area of education in our country is constituted by a set /complex/ of information establishments /institutional information activities: managerial organs, institutions for scientific research, schools, libraries, information centres/ and information elements /information means/: these components make up an organized whole /integrate organizational structure/ providing for systematic creation, collection, evaluation, processing and utilization of information concerning education and school systems.

It may be seen from the above delimitation of the concept of information system, as we conceive it, that it includes the communication process starting with the way in which information is produced /system of producers/ through the way in which the information needs are determined /system of users/ up to the way in which information is mediated /system of mediators/.

In delimiting the contents and extent of information system we adopt the principle according to which the information system constitutes a component part of the management system in education and its objective is to provide for the smooth functioning of communication process so that users at all levels could be kept optimally informed by means of objective, selected and quick information needed for the scientific, rational and effective management in the area of education and school systems.

On the basis of acquired knowledge and conclusions drawn from the analysis of information activities in our education and utilization of findings obtained in the solution of information problem in the Soviet Union and other socialist countries we worked out the project for unified integrate information system for the area of education and school systems.

In our consideration, basic characteristics of the modern information system are particularly its unity, comprehensiveness and integration. These principles are obligatory for the creation of information systems in any branch of social activity in our country and their consequent implementation guarantees high effectiveness of the functional operation of information system both for the given branch and for the nation-wide information system.

Allow me to elaborate briefly upon the significance of individual principles providing the basis for the establishment of an information system in education.

The principle of unity in the information system is reflected primarily in the unified definition of the system, its subsystems, elements and components, in the unified systemization, classification, methods and management concentrated in one center.

In implementing the principle of comprehensiveness in the information system we base our activities on the fact that management organs, institutions for educational research and most other users need the most objective information concerning the educational process, examined phenomenon, object of management.

Efforts aimed at attaining unity and comprehensiveness in setting up the information system constitute prerequisites for its overall integrity.

The integration denotes constitution of mutual ties between relatively independent segments of one information system /e.g. system of educational information/ as well as ties between individual information systems. In our case, the most meaningful interconnection seems to be made between the system of educational and that of socioeconomic information.

We consider as significant also the possibility of interconnecting the information system in the area of education with those of other branches such as culture, health, planning, etc., as well as with republic and federal information systems.

Respective governmental decisions demand that the educational information system should be conceived in such a way, so as to permit the interconnection with the information systems of the C.M.E.A. member countries, eventually with the UNESCO system.

We belive that only the information system built on the principles of unity, comprehensiveness and integrity embodies prerequisites for superior and effective utilization of data processing technology which, on the other hand, ensures high effectiveness and profitableness of the entire information system as such.

Now, I should like to comment briefly on our conception of the comprehensiveness of the information system.

I have already stated that we conceive the information system in education as the integral part of the management system.

In view of the exceptional complexity of educational process, its management is very demanding and calls for a large volume of the most reliable information, particularly that concerning the situation in the area of education, forms, methods, organizational structure, scientific findings and management of education and also those concerning its feedbacks on the social system which is the decisive determinant of the educational process. Individual social subsystems - family, social organizations, culture, science, economy, etc. immediately affect the education on the one hand, but, on the other hand, their development depends, to a great degree, on that of education.

For the above reasons we conceive the complexity of the information system in education as mutual overlapping of three information systems, namely: system of educational information, system of socio-economic information and system of information necessary for planning and budgeting activities. The analysis has proved that top managerial workers using particularly socio-economic and planning information need an ever increasing amount of information from the area of education. On the other hand, research workers need more and more information from the socio-economic field.

To grasp the many-sidedness of information subsystems constituting the overall information system we use, to denote it, the term of information system for education.

The most significant component of the information system is the subsystem of educational information.

In determining the contents of the above subsystem we were faced with the task of defining and delimiting the notion of educational information. We were aware of the complexity of the task and the available literature also widely differs as regards its interpretation.

According to the Soviet author L. D. Kvirtii, scientific information is a consequently documented scientific finding systemised in a manner enabling its active participation in human activities and its functioning in instrumentally arranged information flows and systems. With respect to education the information, fulfilling cognitive and explanatory functions, has an educational substance.

Consequently, we attribute to educational information the following roles:

- that of information on pedagogy as science;
- that of information on educational process;
- that of information on findings and experience concerning the methods of subjects of education.

Information on the science of pedagogy therefore incorporates all the collected, classified, processed, stored and pertinently addressed outcomes of scientific knowledge from the area of pedagogy and its subareas.

Scientific pedagogical information is thus documented scientific knowledge purposefully oriented towards the perception of laws and regularities governing the entire complicated educational process; this perception is then processed so that it might function in information systems.

Among information concerning the educational process we include all the didactically ascertained notions from theory and practice contributing to the improvement of education in schools of all types and levels and of adult education. Of great importance in this context is also information provided by outstanding teachers and pedagogues on the basis of their practical activities.

Data concerning findings and experiences relating to the methods of all the subjects are extremely extensive, because they must include, from the point of view of psychological and educational needs, the latest knowledge acquired in individual scientific disciplines, incorporated into the complicated didactic process.

It follows from the above said that in the production of educational information the account must be taken, to the highest possible degree, of the organic interconnection between educational theory and practice.

This delimitation does not exclude the rest of data fulfilling cognitive and explanatory roles as any information of this kind has the character of educational one.

It may be seen from the previous reflexions that the delimitation of educational information is an extraordinarily complicated task.

Problems related to the system of educational information are being solved, also in this period, through a plan of research. Its objective is to work out a comprehensive project of the nation-wide system of educational information covering, besides the educational sector, also problems related to matters of education in other sectors including systems of in-plant and out-of-school education.

The system of educational information is built upon the principle of its constituting an integral part of the system of scientific, technological and economic information created and directed as a unified organizational and functional system on the entire territory of the Czechoslovak Socialist Republic.

The introduction of the above sector system of educational information into the information practice aims particularly at reaching the following objectives:

- to attain, by means of a nation-wide unified methodical management of establishments for educational research, a high degree of saturation, of users at all levels by prompt, selected information from domestic and foreign sources;
- to make the fullest use, through cooperation and concentration of activities of information bodies, of primary information sources, workers and technical equipment of information facilities;
- to eliminate duplicity and redundancy of activities and to direct the activities of information bodies towards full coverage of all specific needs of users in science, research, education management, including information needs of teachers and pedagogues.

In the present period an analysis is under way of input, acquisition flows in individual types of information bodies, analysis of provided services, their frequency, quality and quantity, analysis of information stock are under way.

This and other partial tasks related to designing the subsystem of educational information must be accomplished before we may proceed to the fulfilment, in the period of the sixth Five-Year Plan, of the following tasks:

- creation and codification of the network of information centres constituting the sector information system and its development;

- profiling of library stocks;
- optimization of information outputs for managerial and research workers;
- elaboration of the first version of Czechoslovak indexing language in the area of educational information in the Czech and Slovak variants.

A more detailed comment on the designing of the system of educational information will be presented, during the discussion, by specialists involved in this field.

The role of the system of socioeconomic information containing data, sets of data and their analyses consists in providing objective information concerning the situation in the area of education and its developmental tendencies and regularities governing this development.

Also the subsystem of socioeconomic information in our information system constitutes an integral part of the centrally managed system of socioeconomic information.

In individual statistical sets we observe pupils and students, on the basis of fundamental pedagogical norms, throughout their school attendance period. We observe teachers and pedagogues of all categories, improvement of their qualification and skills and the creation of conditions contributing to the success of their efforts. We monitor material and technical equipment and observe indices associated with the economy of education.

The subsystem of socioeconomic information is subjected to periodic annual statistical overviews as well as irregularly effected examinations into large-scale socioeconomic phenomena having arisen in the area of education. The use of computing technology has proved its high effectiveness in this sphere and projects for automated information systems are underway.

The scope of indices for the subsystem of socioeconomic information is adjusted with the aim of providing for the totality of information requirements; at the same time, we have been eliminating indices with inadequate expression value and applicability and those no longer valid under new conditions. In processing the data we observe the principle of multipurpose applicability of data once processed. In the area of socioeconomic information we have been focusing our attention on the creation of elementary records, data banks which will be regularly updated.

We have examined and processed the set of data concerning incorporation of all university-trained graduates into practice with special consideration to those having graduated from colleges of education. The value of information thus obtained consists, inter alia, in the fact that it enables the Ministry of Education and individual school administrations to ascertain, after the five-year interval having elapsed since their graduation, theoretical and practical preparedness of graduates for life, the degree of their self-assertion, and to assess conditions created for their successful incorporation into working life by their respective employer organizations.

Socioeconomic information gives account not only of quantitative development of education and the school system, but also about quality of educational process, making itself thus valuable to research and managerial workers.

The institutional structuring of the information system made recently significant progress. The project of the information system is based on the model of management in the area of the school system and education science, and built on the principle stipulating the necessity for setting up a basic information unit - centre - at all management levels, schools and organisations. The role of an information centre is to meet purposefully primarily information needs and to fulfil required information duties. Most information centres, from the point of view of their activities, are thus incorporated both into the system of information producers and into the system of users and mediators of information.

We have been setting up gradually information centres at secondary schools and universities, district and regional authorities managing the school system and central research institutes working under the aegis of individual ministries.

Institutes of Educational Information established as independent organizations attached to the Ministry of Education of the Czech Socialist Republic and that of the Slovak Socialist Republic respectively, constitute top management and methodical centres in the information centres of individual Republics.

In the present period we concentrate on setting up institutional structure of the system of scientifico-educational information.

In the framework of the sector system of educational information we are building the system of subject-oriented centres. This year 16 information centres with important scientific libraries, research institutes and other institutions whose activities are significant at the Republic or State level, will be assigned to function in the quality of subject-oriented information centres with nation-wide coverage in their respective fields.

Individual centres will provide /in cooperation with appropriate professional organizations/ information services, e.g. in the area of general pedagogy, pedagogy of pre-school education, elementary, secondary or university schooling, didactic technique, designing schools and educational facilities, etc.

We put great expectations into the creation of subject--oriented information centres. We anticipate that their activity will result in deliberate and complete satisfaction of information requirements of specific categories of users both from the theoretical field and educational practice.

At the level of school sectors we have been concentrating establishments for educational information into a single centre in order to make possible a unified methodical guidance and effective utilization of human, technical, material and financial resources.

Guidelines set forth by individual ministries charged institutes for educational information with keeping central records of research reports and dissertation papers, processing them and annually informing all the educational information users on them.

The cooperation between institutes for educational information and other information establishments resulted in publishing such periodicals as "Bibliografický spravodajca" /Bibliographical Bulletin - 12 issues per year/, "Prehľady pedagogickej literatúry" /Surveys of Educational Literature/ and "Referátové listy" /Report Sheets/. They present information concerning new achievements in the area of educational science at home and abroad, drawing also upon foreign, mainly socialist sources. This year we took necessary measures to make the above periodicals appear on a nation-wide scale.

The activities of our information systems are positively affected by fruitful and systematic cooperation among information centres of the socialist countries. These are reflected, for example, in the publication of the "Signálne informácie" /Signal Information/ periodical oriented particularly to users in the sphere of management. This periodical presents information concerning education in the countries of Western Europe obtained primarily through the intermediary of UNESCO-BIE.

We prepared a small exhibition for you to get acquainted with the production of our institutes.

The subsequent stage of theoretical elaboration and practical creation of a unified integrate information system in education is that of solving and designing an Automated System of Education Management; its solution is effected within the State plan of economic research for the 1976-1980 period.

The basis of automated system of management is constituted by those components of information system that lend themselves to automation.

In the framework of the above task, we solve problems associated with automated management systems at the levels of ministries, universities, elementary and secondary schools.

Institutes of educational information, in cooperation with other institutions, were assigned the task of solving the comprehensive system of management at elementary- and secondary-school levels, both on the research and designing planes.

Individual problem areas solved in the framework of the above task will be dealt with in the discussion by members of our Institutes.

In the solution of information problem in Czechoslovak education we made several positive achievements.

We feel entitled, in view of those achievements and experience gained, to draw the following conclusions:

- the correctness of the principle according to which the information system in the area of education was built as an integral component of the State information system, reflecting thus the status of education in the socialist society whose development is guided by a univied plan, was confirmed;
- development of education at the present level of the development of our society, in the era of scientific and technological revolution, calls for setting up the information system, both in theory and practice, as a complex of edu-

cational, socioeconomic and other information, reflecting in a most comprehensive and objective manner the quality of educational process, the school system in its totality and constituting, against the background of social needs, the basis for innovation processes and their forecasting;

- unified methodical guidance effected for individual information establishments from a single centre has proved its efficiency as a factor of purposeful cooperation, coordination and efficient utilisation of information resources, means and technical equipment;
- in designing the information system we have been drawing upon experiences accumulated by the socialist countries as well as those of other UNESCO member countries.

Ladies and Gentlemen,

In our paper, especially due to time limitation, we have not given detailed consideration to problems encountered in setting up information systems and developing information activities. Naturally we have a number of problems which we are gradually eliminating. Information science itself is a recent one and experience, both domestic and international, concerning its application in the complex social system of education, is scarse.

We, therefore, welcome any opportunity for exchange of experience and give our sincere support to the implementation of resolutions of the Helsinki manifesto in this area.

Education, according to John Amos Comenius, teacher of nations, is the workshop of humanity. Let us therefore direct all our efforts at making international educational information a tool of struggle for a lasting peace, cooperation, confidence, and mutual respect among nations, a tool put into hands of millions of European teachers and educators.

PAPERS PRESENTED BY THE DELEGATES OF INTERNATIONAL ORGANIZATIONS

REGIONAL AND INTERNATIONAL COOPERATION FOR THE EXCHANGE OF EDUCATIONAL INFORMATION

Leo Fernig, Director, UNESCO-BIE, Geneva

1. This paper is submitted by UNESCO-BIE to the symposium in order to launch the second part of the discussion. The text has been kept short, since it is intended as a guide discussion rather than as a definitive statement of a problem with some cut-and-dried solutions. It is for the participants at EDICO-2 to agree on the desirable forms of further regional cooperation.

2. Much of what is said here is derived from a survey carried out in 1976-1977 by UNESCO's International Bureau of Education in preparation of the 36th session of the International Conference on Education /Geneva, 30 August - 8 September, 1977/. The special theme of the Conference will be: the problem of information at the national and international levels which is posed by the improvement of educational systems. The UNESCO Secretariat has issued two main documents as a result of the inquiry: a working paper /CONFINTED 36/4/ dealing with national experience throughout the world, and a reference paper /CONFINTED 36/Ref.3/ on international networks.

3. In addition, the symposium will have available to it more detailed data provided by the two regional organizations active in the field of educational information, the Council of Europe and the Council for Mutual Economic Assistance.

4. From the UNESCO's point of view, EDICO-2 is of particular importance, since it represents a regional activity which

can be directly reported to the International Conference on Education. At the international meeting it will be valuable to demonstrate what can be done at the regional level, and how the European States are going about improving educational exchanges.

Underlying principles

5. Experience with scientific and technical information exchanges at international level, as exemplified in the UNISIST programme, has shown the validity of a networking approach in which the Member States participate through their national institutions. Responsibility for identifying, selecting and processing national information then rests with these national institutions or focal points, and they in turn transmit information to the international system.

6. The basis of an international system is thus the will and support of the participating countries. Once this is assured, the development of a programme requires the following steps:

a/ determining the users and setting up priority areas for action in terms of their needs;

b/ establishing the main categories of network services;

c/ undertaking a feasibility study;

d/ drawing up the international norms /or standardised procedures/ which will be applied in the international information system;

e/ agreeing on a cooperative distribution of the workload, in particular as regards the responsibility for international coordination, i.e. what institution has to play a leadership role.

Need for improved educational exchanges

7. For the most part, educators and national education authorities have lagged behind their colleagues in other professional fields in developing effective information services and systems. However, at the national level the countries of Europe have made considerable progress in recent years to improve the gathering, processing and dissemination of educational information. Participants at EDICO-2 will be explaining the programmes and projects of their particular countries.

8. Information exchanges between the countries of Europe take place regularly, on the basis of inter-institutional links /i.e. bilaterally/ and on the occasion of the many professional meetings. The latter may have an official character /e.g. conferences of Ministers of Education, meetings within the framework of inter-governmental organizations/ or else a more technical, subject-cetred character /e.g. seminars and expert meetings organized by institutions or voluntary agencies/.

9. No one has yet, to our knowledge, attempted to survey the extent and the range of these European exchanges of educational information and documentation. The volume is likely to be considerable, but the exchanges have not yet been arranged in a systematic, continuous and comprehensive way. Because networking between the relevant centres in Europe, the U.S.A. and Canada is only now emerging, it is safe to assert that educators of the region face the following problems:

a/ It is difficult to have access to all the important educational literature from the countries of the region. Some countries with languages that are not widespread have experiences of value which educators elsewhere never learn about.

b/ Even when documentation occurs in well-known languages, it is not always easy for educators to obtain the documents on a continuing basis.

c/ From the mass of available material, it is often difficult to identify the essential items and to reach an accurate synthesis of the state of knowledge on particular problems.

10. The problems just referred to may be expressed also in terms of efficiency or economic use for resources:

a/ Despite the advance level of educational programmes and research in the region, educators of a given country may limit their study of a new problem by using as background solely information from their own country - thus missing important ideas, insights or practices from abroad.

b/ There is waste of resources when a document produced in one country is sought for, selected and analysed in a number of other countries. For lack of an agreed regional information system, many of the European centres are in fact duplicating efforts.

Priority areas for exchanges

11. If the concept of regional networking is accepted, there is need for the national partners - the various centres which act as focal points - to reach agreement on the subject - matter of information to be handled by the system. The point

to make here is that "education"and training" forms a vast field, involving many people of different kinds, and producing an extensive documentation.

12. The question then is to limit the load by asking: on what aspects of education does a centre in a given country need to obtain information from abroad? This is coupled with a parallel question: on what aspects does a centre feel that it has useful information to contribute to its foreign partners? Clearly, the answers to these questions will change, to correspond to the evolution of education systems. At best, a provisional list of priority areas can be drawn up during a meeting of all those concerned, on the understanding that it will be periodically revised in the light of experience.

13. From observation of the current situation in European education, the following items might be considered for a list of priority areas:

a/ educational policies directed to general reform of the education system /commission reports, bills, laws, regulations/;

b/ structural changes at school and higher education levels, especially the introduction of open learning systems;

c/ research studies which have something of value for reforms or for changes in structures, contents and methodology;

d/ experimentation and innovations which appear to improve the quality of education or which, by effecting economies, make education more widely available;

e/ all improvements in teacher education, pre-service and in-service.

Practical steps to improve exchanges

14. There is room here to examine the existing programmes of regional and international organizations in order to see what additional steps are needed.

15. A brief report may be inserted here on UNESCO activities.

Specifically regional programmes

16. The European Centre for Higher Education /CEPES/ was set up by UNESCO in Bucharest in 1972 at the invitation of the Government of the Socialist Republic of Romania. As a part of its programme for studying higher education and promoting contacts, CEPES carries out extensive documentation and information activities. It works in three languages, English, French and Russian.

17. The regular programme of UNESCO also supports regional activities which at times take the form of additional functions that are undertaken by an existing national institution. In this connexion, two such centres, both in Czechoslovakia, provide documentation and information services in their specific fields: the European Centre for Leisure and Education in Prague /in adult education/ and the European Information Centre of the Charles University for further education of teachers.

18. A recent development, still in its initial stages, envisages the creation of a network of centres concerned with educational innovation and research in a sub-region - the South-East European countries.

19. Finally, the UNESCO Institute for Education in Hamburg has, on an occasional basis, organized meetings of research directors in the European countries.

International services - the IBE

20. The IBE in Geneva is the part of UNESCO's Education Sector specifically charged with educational documentation and information. In this role, the IBE has applied the networking approach by establishing links with appropriate national centres and by promoting the development of regional and sub-regional networks which could fit into a wider, international system. There are four Regional Offices for Education in the developing regions /Africa, Arab States, Asia and Latin America/ which, as part of their programmes as out--posts of the UNESCO Secretariat, have a definite responsibility for educational information. Each Office has begun to build up a regional network.

21. In the remaining parts of the world, Europe, North America and Oceania, the IBE has established sound working relationships with most of the relevant national institutions, and has also sought the collaboration of regional bodies and institutions. All measures to improve exchanges and to develop a regional system may count on the support of the IBE; provided, of course, that the aim is to achieve compatibility or systems connexions, so that European experience may be made available to other regions.

22. While using the networking approach, the IBE has attempted to apply modern techniques to its own work in educational documentation and information. The intention has been

to create suitable tools, methods and procedures for international exchanges which might be adopted by other regional and international centres and then, with due adaptation, serve as the norms for national centres participating in the networks.

23. Schematically, the IBE programme may be summed up as follows:

a/ input: document and information accession and selection is based on broad criteria of policies, reforms, innovations occurring in education systems in both the formal and non-formal sectors. The main users kept in mind are policy makers and administrators, research workers and those resposible for teacher education.

The aim is to create a computerized data base, but this has only partially been realized, so that the IBE maintains a documentation centre of traditional type along with its computer files. The reference collection is given priority,

b/ processing: an Education Thesaurus has been created in English, French and Spanish to provide the fixed indexing vocabulary. It is revised annually, in the light mainly of experience with indexing, but progressively also as the result of retrieval searches:

- selected documents, if easily available, are indexed for computer storage in the IBEDOC file using the ILO programme ISIS with key-words in context;
- if the documents are not readily accessible /for language reasons, very often/, an intermediate product is generated in the form of a long interpretative abstract

of some 1,200 words /coded CEAS/. A short index is added to the data base IBEDOC;

- if the documents are not accessible /because existing in single copies only, which, often happens with national reports to international organizations/ a microfiche is made /coded SRE/ and a short index added to IBEDOC;
- other computer files have been started to hold information on centres and on institutions. These are still very small.

Alongside the mechanized processing the IBE continues to catalogue books, documents and periodicals but plans to computerize this service.

c/ output: two distinct forms of printed output have been built up:

- the International Educational Reporting Service /IERS/, focused on current changes and innovations in education. The Service at present comprises a newsletter, a computerized Awareness List, and a series of case studies and inventories;
- the IBEDATA series which holds basic information on education systems; thus in turn is classified into bibliography, terminology, directory, policies and systems, statistics.

24. The schematic view above must, of course, be placed in the network context. Various partner centres /UNESCO's Regional Offices, the Hamburg Institute, and others/ share in various parts of the programme. The services may be said to be tending towards a system.

25. Finally, how does the IBE respond to users? Again, two cases occur:

a/ network members receive all materials, are asked for support where appropriate, and their inquiries are given priority. In due course, the data base will be provided in magnetic tape to centres wishing to use it;

b/ other inquiries, as defined in paragraph 23 /a/ are given as much research time and documentation as staff resources permit.

26. The problem of assessing the usefulness of an information service in education continues to exercise tne IBE. As standard procedures are built up, attention is now being given to reporting procedures and data gathering, so that evaluation may become an on-going process.

27. This account of UNESCO's work will have to be completed by reports on the regional European organizations. The symposium will then be in a position to generalise its views on how exchanges of information in the region may be improved.

28. Without pre-judging the discussion or the conclusions, it seems that practical steps may be invisaged at several levels:

a/ general agreement on the principles to be followed: networking, identification of priority areas, listing the procedures which need to be commonly accepted;

b/ suggestions to the governments, the regional bodies and UNESCO as to the form that a European system might take, and the respective roles of existing bodies. In certain cases, it may be necessary to propose the creation of additional institutions or mechanisms /e.g. the symposium itself, as a continuing mechanism for contact and consultation/;

c/ agreement on some specific steps which participants could take responsibility for, within their institutions. Such an experimental programme, however modest, over a period of 2-3 years might be the best proof of the validity of items a/ and b/ above.

INTERNATIONAL INFORMATION SYSTEM IN THE FIELD OF SOCIAL SCIENCES

Y.M.Berger, Department Manager of Institute of Scientific Information in Social Sciences of Academy of Sciences, Moscow

Allow me to greet you on behalf of the Institute of Scientific Information for Social Sciences of the Academy of Sciences of the U.S.S.R., which is the basic centre of the International Information System in the Field of Social Sciences /MISON/.

Because of the time limit it is impossible to speak in detail about the many-sided activities of our Institute. I will just mention that a very large team of experts, having various specializations, works there and that it coordinates activities of many authorities, which are engaged in scientific information in the whole country, that it deals with all kinds of information in all spheres of social sciences /excluding pedagogy itself/, that it processes publications published in all regions of the world, and practically in all languages in which the scientific literature appears.

I would like to draw your attention primarily to questions of international cooperation in the field of information earmarked for social sciences, as I am of the opinion that our experiences can be useful. This assumption of mine is based on two preconditions. First of all, I think that scientific research belongs to the sphere of social sciences, even though they form a specific sector within them. And secondly, that is why the problems of scientific information in social sciences and pedagogy are analogical.

First of all, I should like to say a few words about the work of the MISON. This system was established just a year ago, when representatives of presidiums of academies of sciences of a number of the socialist countries signed the respective agreement in Moscow.

MISON determined three fundamental objectives: first of all - to increase the efficiency of the scientific information system in the field of social sciences, and secondly - to remove unnecessary duplicity in the process of collecting and processing scientific information on the basis of the international division of labour /i.e. just the thing the esteemed Dr. Fernig appealed to at the yesterday's meeting/, and thirdly - to ensure possibilities of transition to the single-shot processing of the majority of primary documents with multiple information utilization.

I will state some fundamental particularities of the structure and functions of the MISON.

1. This system is an open system which means that it can be joined by those countries which did not sign the agreement on its establishment.
2. MISON is based on principles of equal, mutually advantageous cooperation of sovereign national systems of scientific information in the field of social sciences.
3. There is no single standard within the structure of national systems of information, covered by the MISON. Having the common objectives with the MISON, the national information centres respect, in their structure and functions, the specifications that ensue from the historical

experiences and tasks confronting every country, from the concrete material and personnel possibilities. But the inevitable condition is the appointment of one national centre which would coordinate scientific and information activities within the framework of the country and represent this country in the MISON. In some instances scientific libraries have become the national centres, and in other cases institutes, were set up specifically for this purpose. In some cases the appointed national authority fulfils only coordinative functions /as for instance in the German Democratic Republic, in the Polish People's Republic/, in some other cases this authority also carries out active scientific and informational work, as for instance in the People's Republic of Bulgaria and in the U.S.S.R.

4. The MISON is being formed in stages. Mostly the traditional methods, forms and means of collection, processing, storing and distribution of scientific information have been utilized in the first stage. At the same time, there is going on preparatory work, concerning the automation of basic technological processes. The MISON will operate as an automated system in the future, widely applying computers and other devices of modern technology.
5. The MISON covers all branches of social sciences. The creation of international subsystems according to the individual main branches of social sciences and special kinds of information is envisaged. For instance, the fundamental decision concerning the establishment of a subsystem of scientific information in the field of pedagogy

and education has already been made.

6. Users of the MISON are national organs, social organizations, scientific institutes, universities of the member countries of this system, as well as international organizations.

7. All kinds of publicized sources of information in the field of social-science disciplines, carried by various media and taking account of the unification of processing, enter the MISON. This is also the question of compatibility of linguistic and technical means and their material ensurance.

8. The activities of the MISON are directed by the Council, consisting of only one representative of each member country. These activities are determined by long-term plans. To be concrete, at present the work consists, first of all, in preparing common bibliographical registers, collections dealing with common problems and topics, in elaborating the methodology of scientific and informational work, in training and instructing the personnel. The information materials, offered by national centres, are published in editions by the MISON /here, at the exhibition only a rather small part of these materials is represented/. At the same time, preparations for the establishment of the unified automated information system are under way. The following session of the MISON Council will investigate this most important question here in Bratislava at the end of this year.

International cooperation of our Institute is not limited to MISON only. The INION participates actively in the work of a number of international scientific and scientifico-informational organizations as the International Federation for Documentation /FID/, the International Federation of Library Associations /IFLA/, the International Committee for Social Sciences Documentation, the European /the Vienna/ Centre for Coordination of Research and Documentation in the Field of Social Sciences. It participates in the UNESCO project, the objective of which is the creation of an international information system in the field of socio-economic development. Bilateral agreements on cooperation with a number of countries of Europe and of other continents have been concluded.

I should like to mention specifically an event, which, in my opinion, will be of great importance for the further development of international cooperation among the European countries in the field of information regarding social sciences. I have in mind the consultation of the European Social Sciences Information and Documentation Centres in which took place in Moscow two weeks ago. The consultation was organised by our Institute, under the aegis of UNESCO and the European /the Vienna/ Centre of Coordination of Research and Documentation in the Field of Social Sciences.

Representatives of many international organizations from the European countries and Canada participated in this consultation. They adopted two documents there, and I regard it purposeful to acquaint you with their contents, as some of the provisions in these documents will be useful when final documents of our Colloquium are prepared.

The resolution adopted at the above consultation mentions that it is for the first time after the Helsinki Conference on Security and Cooperation in Europe, that favourable conditions for the development of cooperation in the field of information regarding social sciences in Europe have been created. And, secondly, that the development of cooperation in the field of information and documentation in social sciences will constitute an effective way towards implementing the principles of the Final Act of the Helsinki Conference.

The participants in the above consultation appreciated with gratitude that UNESCO and the Vienna Centre regarded information and documentation in the field of social sciences to be essential, which found its reflection in the support rendered to the 1st Conference of European Information and Documentation Centres.

The above resolution stressed that in the proceedings of the consultation the need to extend the international exchange of books, microfiches, reports, bibliographies, and other kinds of information and documentation, as well as the need to broaden the cooperation in these spheres on the basis of recommendations unanimously adopted at the consultation had become evident.

The first European consultation on questions of information and documentation in the field of social sciences proposed that under the guidance of the Vienna Centre the following measures should be taken:

- to continue the activities of the Preparatory Committee, as an ECSSID Committee, in preparations for the following session in the Polish People's Republic, in accordance with the recommendations of the consultation;

- to enable to the ECSSID Committee to set up several working groups, consisting of experts, who will elaborate the working documents of the next consultation focussing on the following problems:

  a/ establishment of international, compatible information systems and technologies;

  b/ elaboration of standards and directives for information and documentation, by means of consultations and cooperation with international organizations in the field of social sciences, with the purpose of more efficient international exchange;

  c/ formation of a model of variant measures, directed at the national coordination of many-sided activities in the sphere of literature, research and data concerning information and documentation in social sciences;

  d/ determination of problems, the clarification of expressions and terms for the elaboration of a programme of information and documentation in the field of social sciences, including the working definition of social-science disciplines;

- to enable to the ECSSID Committee to set up working groups and to organize courses in the individual spheres of information and documentation, concerning social-science disciplines;

- to help in the publication of the ECSSID information bulletin and guide-books of the ECSSID organizations;

- to determine national centres having the authority to answer questions within the framework of ECSSID;
- to carry out preliminary consideration of the question concerning the possiblities of starting an ECSSID periodical;
- to support the exchange of experts in the field of information and documentation concerning social sciences between national centres.

The consultation approached UNESCO with a request to assign due means to the Vienna Centre for the work of the ECSSID Committee, when developing important activities resulting from the first consultation.

The recommendations adopted at the consultation of the European centres of information and documentation further noted that major development of information in the field of social sciences had been recorded in the past two years. There had been set up specialized information centres in many European countries, systems of secondary publications, automated information systems had been created.

The participants in the consultation claimed with satisfaction that there existed the possibility and willingness to continue the search for practical solutions, concerning the cooperation in the field of information.

At the same time, the consultation proved that there occurred certain difficulties in the development of common informational activities in the field of social sciences. For instance, centres for social-science information and documentation have not been yet set up in all countries of Europe.

Language barriers and substantial differencies in the terminology constitute a great problem.

Information centres use various methods of acquisition, of data processing, study of information, and various kinds of information services.

Participants in the consultation proposed the following:

1. to extend the international exchange of books and microfiches, reports and bibliographies;
2. to develop cooperation in the preparation of international bibliographies, covering various problems, to extend the exchange of workers, methodologies and methodical materials concerning the organization of the information work, as well as to utilize more efficiently the existing information sources, by means of interlibrary lendings and analogical means of services;
3. to ensure the study of problems connected with the development of information services and their influence upon the research process;
4. to ensure closer cooperation between libraries and information centres;
5. to ensure mutual exchange of current information on research in the field of social-science information;
6. in cooperation with the corresponding international organizations to elaborate and to adopt standards for more efficient international exchange of social-science information materials and documentation /e.g. formats of entries, principles and methods of information retrieval, formats of

guide-books, bibliographies and information/, to ensure more active participation of experts from the field of information and documentation concerning social sciences in activities connected therewith;

7. with regard to the fact that the consultation participants consider the creation of international compatible information systems and technologies to be one of the most significant problems, it is necessary to convoke an international consultation of experts, who would discuss the question of establishing automated scientific information systems in the field of social sciences;
8. to support on a large scale the implementation of international courses in the field of instruction, mostly in the sphere of new technology;
9. to ensure adequate exchange of information /including data on institutions and experts, engaged in the research/, in the interest of improving cooperation in mutual exchange of information and documentation concerning social-science research projects;
10. the consultation participants stressed the importance of international cooperation in the creation of more perfect information systems, they proposed to the Vienna Centre to take over the responsibility for ensuring adequate contacts with the existing organizations in this sphere.

The consultation participants voiced their wish that the Vienna Centre should start publishing a bulletin, which would reflect the activities of the European social-science information centres. At the same time, they have recommended to publish as soon as possible a guide-book in all social-science information organizations in Europe and to discuss the question, concerning the publication of a European periodical dealing with social science informatics. They have asked the Vienna Centre for cooperation in setting up groups of experts in certain spheres /for instance in the sphere of automated information research/ in the interest of broad exchange of opinions and rendering help in preparations of joint projects.

I am convinced that the consultation itself and its results represent a significant and constructive step toward the concrete implementation of principles adopted by the Helsinki Conference.

COUNCIL FOR CULTURAL COOPERATION, THE EUDISED PROJECT

B. Von Mutius, Head of the Documentation Centre, Council of Europe, Strasbourg, France

1. EUDISED stands for EUropean Documentation and Information System for EDucation. The project was established by the Council for Cultural Cooperation /CCC/ within which the 22 states - parties to the European Cultural Convention, cooperate in the framework of the Council of Europe. When the CCC in September 1968 authorized the Council of Europe's Secretariat to convene in 1969 experts to study the application of computer techniques to educational documentation and information, the main reason for this decision was that in a number of countries - France, Federal Republic of Germany, Netherlands, Sweden, Switzerland and the United Kingdom - national agencies had already begun to experiment with such techniques. It was felt necessary to coordinate these experiments and thus to prevent the use of different software and hardware leading to incompatibility of output which would be detrimental to information exchange. At the same time, the American ERIC system began to arouse considerable interest in Europe, and it was generally held that it would be desirable to create similar system in the Western European countries.

First stage - feasibility studies

2. A working party of experts set up under the chairmanship of Professor E. Egger, Geneva, visited in 1969 the most advanced national institutions in this field in member states

and on the basis of this evidence published a report on the application of computer techniques to educational documentation and information. The author of the report was Professor K. Spangenberg, Berlin. Two further volumes contained national reports and technical studies respectively. The report was submitted in 1970 to the Committee for Educational Documentation and Information on which member governments are represented by their delegated experts. The Committee decided that the matter should be pursued further and that in particular the problems of using a common thesaurus of descriptors and a common format for recording educational data and materials should be studied in greater detail.

3. Thus, a second working party chaired by Mr. J. Viet, Paris, was created to collect evidence from national and international sources and examine these problems. Its report, written by the Chairman and published in 1971, contained a general design for the proposed system and was complemented by a volume of technical studies. The Committee at its 1971 annual meeting adopted in principle the proposed system design and set up two groups of experts, one to elaborate the EUDISED Thesaurus and the other to prepare the EUDISED Standards and Format.

Second stage - Elaboration of instruments

4. Both groups of experts completed their work in 1973. The computer processed multilingual EUDISED Thesaurus was edited by Mr. Viet and published in English, French and German in early 1974 by Mouton /Paris and The Hague/. It contains some 2,600 descriptors, listed both systematically under 21

facets and alphabetically. Within the facets each descriptor is given in either English, French or German /according to the language version/, followed by its equivalent in the other two languages. Thus, for the first time an agreed multilingual documentation language for education became available in Europe. After the publication of these three thesaurus versions, national authorities asked the Council of Europe for support in preparing versions in their own languages. Thus a Spanish version was published by Mouton in 1976 and a Dutch version in 1977 by the Netherlands Government Printing Office. The Spanish version contains the EUDISED descriptors in Spanish followed by the French and English equivalents; the Dutch version gives also the German equivalents, thus covering four languages.

Furthermore, the Brazilian Education Ministry prepared and published in 1974 a Portuguese-English version of the Thesaurus.

5. The report of the other group of experts chaired by Mr. R. Coward, London, was published under the title "EUDISED Standards, Format, Character Representation 1973" /in English, French and German/. It contains recommendations for adopting common transmission standards, bibliography standards, code standards and format implementation standards. Furthermore, it outlines the main aspects of the network development which would be needed for the envisaged information exchange between national agencies applying computer techniques.

Third stage - Field experiments

6. With the availability of these two instruments it became possible to test the proposed system by processing samples of data from various educational fields. The Committe for Educational Documentation and Information recommended in 1974 that the first experiment be carried out in the field of educational research and development. In this field already existed a national infrastructure. Agencies in member states had in 1968 and 1970 cooperated in producing the European surveys of educational research which were published by the Council of Europe and had, since 1971, prepared and published national surveys under the auspices of the Council of Europe. Thus nine national agencies were asked to select R and D projects in their countries and to complete for each of them a common worksheet. Some 250 worksheets on ongoing and completed R and D projects were obtained; they were processed by the British Library under contract to the Council of Europe. The printouts were published in the 1975 experimental issue of the EUDISED R and D BULLETIN.

7. At the recommendation of the Committee two similar experiments were carried out, the first under the supervision of Mr. L. A. Gilbert, London, in the field of information exchange on audio-visual teaching and learning aids, and the second, under the supervision of Mr. Viet, in the field of abstracting educational articles in scientific periodicals. Special worksheets were elaborated for both fields. National agencies were asked to select samples of items and report on them on the worksheets which were again processed by the British Library. Each experiment comprised some 250-300 items from five countries. The printouts were published in the cour

of 1976 in experimental bulletins - the EUDISED-AV BULLETIN for the audio-visual material and the EUDISED-EP BULLETIN for the educational periodicals.

Fourth stage - Generalization of experiments

8. At a meeting of the Bureau of the Committee for Educational Documentation and Information with the editors of the national surveys of educational research which was held at the invitation of the Commission of the European Community in Luxemburg in November, 1975, it was decided to propose to member governments to generalize the EUDISED R and D experiment as from 1976 onwards. This proposal was accepted and the procedure for cooperation is now as follows:

- All national agencies participating in the project complete a EUDISED R and D worksheet for each national R and D project - whether ongoing or completed in the year in question - which they wish to enter into the EUDISED R and D data base. Particular emphasis is given to covering reform and innovation projects in which researchers participate. The multilingual EUDISED Thesaurus is used for indexing. Abstracts are written in either English, French or German. The worksheets are edited at the Council of Europe's Documentation Centre for Education in Europe and processed by Text Processing Services, Hitchin, near London. National agencies which use a computer for processing their data, exchange tapes with the processing agency and the editing is done on a provisional printout.

- The final printouts in the form of film pages are used for offset printing of the EUDISED R and D Bulletins, of which each contains some 250 projects, an author index and subject indexes in English and French with abbreviated subject indexes in Dutch, German and Spanish. The Bulletin, of which 4,000 copies are printed, was distributed free of charge as far as the 1976 series /three issues/ was concerned. As from the 1977 series the Bulletin /4-6 issues per year/ has become a commercial publication.
- All national agencies participating in EUDISED R and D may order at the end of a year film pages of their national projects and of the corresponding indexes for producing, at their expense, annual national surveys of educational R and D.

9. At present eleven countries participate in EUDISED R and D: Austria, Denmark, Finland, France, Federal Republic of Germany, Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom; two more countries, Belgium and Ireland, will join the project in the course of 1977. It is envisaged to offer in future retrieval facilities by linking the EUDISED R and D data base to EURONET which is at present being set up by the Commission of the European Community. The Commission will also take care of the management and revision of the multilingual EUDISED Thesaurus. Furthermore, an Inter-Secretariat Working Party for educational data processing comprising UNESCO/BIE, the Council of Europe and the Commission of the European Community was set up in March, 1977, to coordinate and promote projects in this field like EUDISED R and D.

10. Thus, in the field of information exchange on education research and development, a decentralised system has been established which comprises three parts: the national data bases made up of all R and D projects in the countries concerned, the EUDISED R and D data base consisting of national projects of gneral interest, and the publications generated from the EUDISED base. The EUDISED R and D Bulletin is intended to give the reader general information on educational research and development in the countries which participate in the project. Any reader may obtain further information by requesting it from the institute where the research is or was carried out or by ordering the publications listed under the project in question. The annual national surveys which are a by-product of the system serve in particular local needs. Tape copies of the EUDISED base may be obtained by each agency cooperating in the system. When all national agencies are equipped to use these tapes, the agencies themselves will be able to carry out retrospective searches and offer individualised information services according to the interest profiles of user groups.

11. A similar generalization is planned for EUDISED AV. A first meeting of national agencies active in this field will be held in mid-1977. As far as EUDISED EP is concerned, it resulted from several meetings that the time is not yet ripe for a generalisation.

Conclusion

12. The EUDISED project was designed to serve - on the basis of a common thesaurus and format and by applying computer techniques - the information needs of teachers, administrators, researchers and the public at large in the West European region in all fields of education, in statistics, curricula and teaching materials, research and literature, legislation and policy. Such a regional system can only function as a decentralized system by facilitating cooperation between national agencies and its scope and efficiency will depend on the state of development of the national agencies. The present budgetary constraints at the national and international levels have not allowed for a general implementation of EUDISED: it has so far become operational only in the field of educational research and development. This field, in which new ideas and experience become continuously available for transfer from one country to another, is of central importance for the general improvement of education. If the cooperation in EUDISED R and D proves to be of considerable benefit to participating countries, it is to be hoped that a further extension of EUDISED may, in the future, become possible.

GENERAL INFORMATION PROGRAMME OF UNESCO

Kenneth H. Roberts, Deputy to the Director of the Division of the General Information Programme, UNESCO, Paris, France

There have been stated several references to the UNESCO-UNISIST programme. The long-term UNESCO-UNISIST programme of cooperation in the field of information was formally initiated at the seventeenth session of the General Conference in the year 1972, in order to promote the establishment of a flexible world network of information systems and services based on voluntary cooperation and to facilitate equal access to information, especially by helping the developing countries to meet their information needs.

Although initial programme activities emphasized the information transfer in the natural sciences and technology, attention has been paid from the inception of the programme to ensuring the appropriateness of the UNISIST framework to the social sciences. Originally identified with the UNESCO Science Sector, UNISIST has been implemented since January, 1977, within the intersectorial UNESCO General Information Programme.

The General Conference of UNESCO during its nineteenth session at Nairobi in November, 1976, decided to reorganize the activities assigned previously to the two programme sections concerned with "Scientific and Technological Documentation and Information" and "Documentation, Libraries and Archives".

The implementation of that decision led to a change of structure in the UNESCO Secretariat. The Director General created early in 1977 the Division of the General Information Programme, regrouping most of the activities formerly executed by the units just mentioned above. The Division is placed outside the intersectorial structure of UNESCO and is attached to the General Direction of the Organization.

Programme activities of the General Information Programme are conducted in the areas of:

a/ policy and planning in the information field;

b/ development of the information-handling capability or infrastructure;

c/ norms and standards for information exchange;

d/ training in the information field.

Policy and Planning

At the international policy level, UNESCO participates in consultations and promotes study on information networks to help ensure the use of proven techniques and efficient structures.

At the regional level, working contacts are maintained with existing information networks and programmes, such as those of C.M.E.A. and of the European Communities which are considered to be effective as regional links within the UNISIST framework.

At the national level, liaison with the UNESCO programme is ensured by national information focal points and UNISIST National Committees already established in 55 member states.

A focal point is defined as the national agency responsible for coordination of overall information policy including national participation in international information networks.

In order to promote the development of the national information policy, guidelines and assistance are made available to member states upon request.

In its efforts at the national level, the UNESCO Information Programme is closely associated with discipline-oriented information programmes within the United Nations organizations concerned with strenghening national capabilities.

Development of Infrastructure

Direct support is provided by UNESCO to initiate international infrastructure designed to solve information problems of a general nature. In the field of numerical data, a long-term programme in cooperation with ICSU includes establishment of the World Data Referral Centre, as one link in the ultimate UNISIST network of international referral services.

At the national level, surveys of existing information facilities are facilitated by published guidelines which have been successfully tested and used in several countries.

There exists also the possibility to make available advisory missions to assist member states in assessing their resources and needs and in all aspects of information system development.

Norms and Standards for Information Exchange

Normative action is continually required to ensure the possibility for universal access to information by all member states and networks. An essential role of UNESCO thus consists of proposal of norms relevant to information work, co-operating closely with the International Organization for Standardization which is responsible for their ultimate adoption as international standards, if necessary. The normative action of UNISIST is not generally linked to specific subject disciplines.

The world register of periodical titles is maintained through the International Serials Data System /ISDS/, which now comprises an International Centre in Paris and a network of 30 national and 8 regional input centres.

Unified standards for all components of bibliographic descriptions are being developed as a prerequisite to international exchange of bibliographic data.

Training in the Information Field

The UNESCO programme is helping developing countries to build up facilities for the training of needed information manpower. In the meantime, support is provided for international training of managers and advanced specialists to catalyse development of national information systems and teachers to staff national training programmes for information specialists and users. Training activities are formulated in the context of a need for common approaches and methods in information work, to facilitate international exchange of information.

Within the General Information Programme nearly 30 international courses are planned for the current biennium, ranging from short refresher courses and seminars to full-year training programmes. Each course is arranged in co-operation with host-country authorities to accommodate 20-30 participants from developing countries.

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It was regarded by the organizators as important that a staff member of the General Information Programme attends this meeting in order to find out what your requirements are, which will reflect the views of an important group of information specialists and users, and thus these needs could be reflected in future programmes of the General Information Programme.

Within the UNESCO framework it is, of course, the IBE which serves as the focal point for the questions that directly concern this meeting. Mr. Fernig suggested in his remarks a framework for our thinking.

I will be listening with interest to your suggestions of practical steps which can be recommended for action first of all to the governments and ask them for their implementation, in order to improve the exchange of educational information.

ON QUESTIONS RELATED TO INTERNATIONAL COOPERATION IN THE AREA OF INFORMATION

Vladimír Štefánik, FID, the Hague

I am delighted with having the opportunity to greet, on behalf of the International Federation for Documentation - the world oldest professional organization working in the sphere of scientific and technological information - participants of the EDICO-2. The Federation, as a non-governmental organization of national members representing almost 70 countries, aims, by means of international cooperation, at promoting the development in the field of organization, collection, retrieval, dissemination and utilization of information in science, technology, social sciences and humanities.

The basic objectives of the International Federation for Documentation are primarily the following ones:

a/ to associate, at the international level, organizations and specialists involved in solving the questions related to scientific and technological information, to coordinate their efforts, and to establish an international forum for mutual exchanges of information and experience;

b/ to support research, organization and practice in the area of scientific and technological information of all kinds, and to contribute to setting up an international network of information system;

c/ to determine research orientations in the area of scientific and technological information, to promote and coordinate this research at the international level;

d/ to contribute to setting out criteria and methods for evaluating the effectiveness and management in the sphere of scientific and technological information;

e/ to support the training of information specialists /documentalists/ as well as research workers in the area of scientific and technological information with special consideration to the developing countries;

f/ to monitor information needs and requirements of individual scientists, technicians and other specialists, and to assist in training information users for a more effective utilisation of documentation and information services;

g/ to develop further the Universal Decimal Classification, and to support the development of other indexing languages intended for the sphere of scientific and technological information;

h/ to create terminological means with respect to classification and indexing procedures, to deal with questions of automated indexing and those related to machine indexing languages and thesauruses;

i/ to assist in improving the present system of publishing scientific publications, to make better use of the reprography and computing technology and to develop methods for exchanging special publications;

j/ to stimulate the creation of information organizations especially in the rapidly developing regions;

k/ to improve principles for data processing and transfer, especially factographical ones;

l/ to organise the exchange of information significant for activities of FID members and associate members, and to create conditions for this type of cooperation;

m/ to look for most effective ways and forms of cooperation with other international organisations operating in the area of scientific and technological information;

n/ to participate in international conferences and to organise such conferences with respect to problems interesting the FID.

The International Federation for Documentation thus creates a professional background for all the responsible governmental organizations, particularly UNESCO and other organisations of UN member countries. The International Federation for Documentation makes its findings accessible also to other governmental organizations and information systems at regional level. In general, the FID attempts at functioning as a catalyst of cooperation between all the organizations having in its programme the library service and scientific and technological information.

I am convinced that the most important tasks and outcomes of activities performed by the International Federation for Documentation are well known to most participants of this colloquium - especially its efforts of many years in the development of Universal Decimal Classification. In addition, the FID takes part in the development of information languages; it works in the sphere of theory of scientific information and linguistics, of mutual information on research and development projects in the area of scientific information, etc. All this is performed by the FID through specialised committees and regional commissions. We have to mention also another very important sphere of FID activities, namely the training of information workers.

It is not necessary to emphasize the fact that in the period of scientific and technological revolution and in modern society with a differentiated science structure and complicated multidisciplinary relationships in science and technology, the significance of international information systems has been steadily increasing. I am convinced that questions related to the international system of scientific information concerning the area of education play an extremely significant part in these relationships. The combination of two serious problems of modern society - information and education - may even contribute in a wider context to the development of professional activities connected with scientific and technological information. The International Federation for Documentation therefore expresses its satisfaction with the organization of this particular colloquium and is ready to assist in establishing an international information network or, more specifically, an international information system in the area of education.

I consider the possibilities for cooperation between the International Federation for Documentation and respective organizations of individual countries to be very realistic. The FID presently devotes considerable attention to the development of Universal Decimal Classification for the area of social sciences, i.e. group 3 UDC. The FID appreciates the assistance of all collaborators - specialists. I believe that this type of cooperation may be, in the perspective, further expanded. The FID will welcome the opportunity of commenting, in its regular publications, upon questions related to educational information. In the interest of common utilization, we may consider for instance a regular publication of annotations dealing with effected investigations and development in FID materials. If needed, also a more intensive cooperation may be envisaged with respect to specific problems or projects, on the basis of special contracts or agreements; the possibility that this cooperation would be organized by UNESCO should not be excluded. The next FID World Congress will be held in Edinburgh in 1978. I recommend to include in the agenda of this congress also a report on the international system of scientific information concerning the area of education. I am convinced that in addition to the above propositions also other, maybe even more efficient forms of cooperation might be suggested and that in the future, conditions for such cooperation will be more favourable.

Allow me to express my belief in the success of EDICO-2 and in the success of international cooperation in the area of educational information.

INFORMATION PRIORITIES IN IN-SERVICE TEACHERS' EDUCATION IN EUROPE UNTIL THE YEAR 1980

Hana Procházková, Deputy Director of the European Information Centre of Charles University for In-Service Teachers' Education, Prague

The European Information Centre for In-Service Teachers' Education was established at Charles University in Prague as a national information science institution. It is able to conduct its information activities within the European region depending on the social needs, interest of the collaborating organizations and its capacity. Since 1976 special attention has been paid to the Centre in its capacity as organiser of the international exchange of information initiated by the conclusions of the Helsinki Conference and accepted by UNESCO and by Czechoslovakia's partners in the C.M.E.A. countries.

In the period of the reorganization of the educational system, attention is focused on the teacher and the innovation of his qualification profile. The problem area of the initial and in-service education of teachers in the context of lifelong education has hitherto not had an adequate information background. Specialist communication on these problems has been conducted through direct contacts between specialists, through the cooperation of the respective institutions and by the publication of the results of research and experience in specialist press; the subject area was widely dispersed in the information sources.

The bibliographic control of the said problem area secured on the one hand by the central bodies of science educational information, on a relatively general level, and on the other hand by specialist institutions partaking of professional activities related to the in-service education of teachers, the latter mostly with regard to their specific current tasks.

The importance of educational goals, the need of the exchange of knowledge on an international level and the necessity of coordinating information processes has given rise to the need of the comprehensive collection of information and documents, of providing selective information to the respective users, to make critical analyses of the content of such information and on the basis of comparative and case-studies to contribute to the development of the structure, content, organization, methods and forms of in-service education of teachers in all participating countries.

The mission of the European Information Centre of Charles University for In-Service Education of Teachers in Prague is the construction of science educational information subsystems of European provenance, in such a manner as to secure that its basic information function, i.e., that of a clearing-house and an analytical centre to be developed by the year 1980. Certain information priorities have been determined with regard to this goal.

The respective information services have to meet the concrete demands placed by the main categories of users, mostly in science educational and research institutions for in-service education of teachers and their superior bodies of management and methodology in the field of education and outside this sphere. Next to this they must respect and anticipate long-term social information needs. In order to establish such services it is necessary to determine the specialist information sources and information flow, the main relevant information sources, the desirable techniques and carriers securing information availability and first and foremost the effectiveness of the use of science educational information.

We proceed from the following functions of the said subsystems:

1. gnoseological - the establishment of that part of the information fund of the educational sciences which is necessary for the solution of the concepts of the in-service education of teachers;
2. decision-making - providing information for the system, its management and regulation at territorial or institutional levels;
3. implementational - the practical introduction of the results of educational research and management into the systems of the in-service education of teachers;
4. innovational - the exchange, generalization and evaluation of practical experience and the application of progressive knowledge with regard to development in the given field;
5. integrative - the interlinkage of the system of the in-service education of teachers with the systems of science educational information on an international scale.

These tasks are fulfilled through the subsystem's acquisition and distribution policy which the ELC-PET implements using the information network which is being established. The structure of this network is being built within the legislative, organizational and programme frameworks of the educational systems in the respective States. Functional bonds are established through the system of science educational information, the regional forum of which is the EDICO Colloquium.

The Centre organizes contractual cooperation with central institutions for the further education of teachers in the individual states which serves as the professional basis for organizing the exchange of less easily available primary documents, such as official documents, internal publications, research work, curricula and teaching aids, reports on courses, etc. Next to this the Centre collaborates with national and regional bodies of educational information and documentation, with the aim of exchanging secondary information, i.e. data on the location and possibly on the specification of primary documents, events or institutions in the observed field.

On the basis of cooperation within the network the centre collects and processes information on in-service education of teachers in the socialist states and, in case of special interest, in the other countries of Europe it mediates the mutual information exchange between these countries and disseminates their experience to third countries, it avails itself of the possibility to acquire appropriate materials through UNESCO and its specialized institutions, i.e., the International Bureau of Education /IBE/ in Hamburg and the European Centre for Higher Education /CEPES/ in Bucharest. In this manner the Centre is gradually developing the regular exchange of information as required by the in-service education of teachers in Europe.

Outstanding problems which have to be solved are the introduction of a unified filing system and a unified method of bibliographic description with regard to the computer processing of documents. The Centre respects existing systems and it also participates in the construction of the respective part of the education Thesaurus on a national scale. Within the framework of international systems it also participates in the development of the Soviet Education Thesaurus in the Centre of Science and Educational Information of the Research Centre of General Education of the Academy of Pedagogic Sciences of the U.S.S.R. and the UNESCO Education Thesaurus published by the International Bureau of Education in Geneva.

The information processing technique of the Centre complies with the type of information services which are provided, i.e., express information bibliographies, abstracts, surveys, analytical and comparative studies, conferences, etc. The system is to be put on a selective dissemination basis.

The Centre also disseminates information in the edition series, also published in English and Russian:

a/ conference proceedings of international conferences which the EIC-FET organizes on the further education of teachers: on pre-school education in 1976; on the further education of teachers and on training in the use of the educational media in 1977; on the system, content and methodology of in-service education of teachers in general with special emphasis on self-education to be held in 1978;

b/ a collection of articles and documents: "In-Service Education of Teachers", published once a year. The first volume, to be published at the end of 1977, will carry, among others, the concept of the said informational subsystem;

c/ annotated bibliographies- several volumes of special bibliographies have been published or are in print: "Didactics of Chemistry", "Didactics of Biology", "Didactics of Mathematics" and "Educational Guidance". As of 1978 the selective bibliography "In-Service Education of Teachers" will be published, the first volume covering the years 1970-1976, the subsequent volumes will appear once every two years;

d/ the EIC-FET Newsletter is published twice a year, and carries information on the activity of the Centre and on international activities in further education. The first number is due to be published shortly and it will carry materials on information and research priorities of the further education of teachers in Europe and on the Centre's orientation up to the year 1982 in accordance with the Recommendations of the Meeting of UNESCO Consultants of the Countries of the European Region which met in Prague in September 1977.

PAPERS PRESENTED BY THE DELEGATES

OF UNESCO MEMBER COUNTRIES

PRESENT-DAY EDUCATIONAL INFORMATION SERVICE IN THE U.S.S.R.

Vlas S. Aransky, Deputy Director of the Research Institute of General Pedagogics, Moscow, U.S.S.R.

First of all, I should like to greet you, participants in the EDICO-2, on behalf of a great number of workers involved in educational information in the Soviet Union and to communicate their wishes for our work to be successful.

This meeting of representatives of information services in the field of education representing 23 countries and 7 international organisations, was made possible thanks to a favourable political climate of recent years, particularly after the Conference on Security and Cooperation in Europe. This Conference created prerequisites for the cooperation in the area of educational information. The extension of mutual contacts between our information centres will contribute to the development of cooperation and understanding between European countries, to the development of education and educational science.

The success of any international cooperation depends not only on the interest of individual national participants, but primarily on their active efforts. It appears to be inevitable to gain mutual insight into information activities of potential partners.

In this respect I positively appreciate the fact that the EDICO-2 programme includes the exchange of information concerning the activities of information centres represented here.

Under existing conditions of scientific and technological revolution and accelerating rate of scientific and technological progress, it is not possible to make use of achievements of science and technology, to improve management of national economy without an advanced system of scientific and technological information. Consequently, the Communist Party and Soviet Government have devoted great and permanent attention to the development of a unified, effectively operating State information system.

In the course of the last 15 years a wide network of establishments for scientific and technological information was set up in the Soviet Union. It consists of 10 federal, 86 central subject-oriented, 15 republican institutes, 90 inter-industry territorial STI /scientific and technical information/ centres and approximately 10 000 STI departments. The STI system closely collaborates with 60 000 specialized scientific and technological libraries.

The Sector Information Centre for Pedagogy and National Education attached to the Soviet Ministry of Education is a constituent of the State system of scientific and educational information.

The Centre for Scientifico-pedagogical Information consists of the Department for Scientifico-pedagogical Information and 30 information units, 12 of which are attached to the Soviet Academy of Pedagogical Sciences and 18 to institutes for educational research of individual republics. Our Centre cooperates with the K. D. Ushinsky State Pedagogical Library. One of the most significant tasks of the Centre is to provide information services to users. Its work is very heterogeneous and takes on various forms.

1. Analytico-synthetical processing of sources and preparation of information materials for publication.

The Centre fulfils the important role of gathering, processing and publishing materials characteristic of the situation in and developmental tendencies of educational practice and pedagogical science in the Soviet Union and abroad. The collection and processing of data valuable both from theoretical and practical viewpoints constitute the basis of the entire information activity of the Centre.

Thanks to joint efforts of the Centre and information units of 13 research institutes of the Soviet Academy of Pedagogical Sciences as well as 15 institutes for educational research /schools/ of individual republics, the Centre receives a great number of information materials. These include abstracts of the most significant books, articles, collections of scientific papers, materials from conferences and consultation meetings published both centrally and in all Union republics. The most numerous are abstracts of publications appearing in Union republics in individual national languages and in Russian.

More than 400 abstracts of books, papers and other materials received annually by the Centre are published in various topical-oriented volumes and thus made accessible to different categories of users of information, including teachers in schools of general education, workers of educational authorities. The Centre receives a great number of materials concerning progressive educational experiences; these are collected and a selection is made of them for needs of all-

-Union educational readings. Solely for the preparation of the 4th all-Union reading held in 1976 in Kiev the Centre received more than 1,000 papers.

Abstract materials as well as materials explaining progressive educational experiences accumulated by individual teachers and educational teams are classified and used by the Information Centre for the purpose of selective information dissemination.

The Centre regularly receives also reports on study trips to foreign countries of workers of the Soviet Academy of Pedagogical Sciences and other institutions of the educational system. These materials are processed and useful information is printed.

Materials received by the Centre include also a large volume of information published abroad, particularly in the European socialist countries, in America and Asia as well as information published by the International Office of Education - UNESCO /Geneva/ and by the UNESCO itself /Paris/. I shall give a more detailed consideration to this question in discussing the second issue of our programme.

Information of different nature collected by the department constitutes the basis for the publication of information materials meeting requirements of various categories of workers in the area of education.

The department presently issues the following types of information material:

bibliography of works concerning education, published in the U.S.S.R. and abroad. Background materials are provided by the K. D. Ushinsky State Pedagogical Library. We publish five series of "New publications in the area of pedagogical sciences and education", focusing on problems associated with the education of students, preschool education, teaching methods for individual school subjects, etc.

It has to be mentioned that the publication of subject-oriented series corresponds to the needs of the selective dissemination of information. The subscriber receives the series corresponding to his sphere of interest.

The department publishes also the following abstract series:

- preschool education,
- problems related to Communist education of children and young people,
- problems of didactics,
- methodology of education and methods for educational research,
- polytechnical education, vocational guidance of students,
- methods for teaching school subjects,
- school, family and society,
- pedagogical training, post-graduate courses for educationists,
- economy, planning and organization of education,
- adult education.

Each series consists of 4 to 6 issues; the extent of individual issues being, depending on the given series, 25 to 50 pages. In 1976, in all the abstract series 66 materials were published with the total extent of approximately 1,800 pages. The total sum of abstract materials published in 1977 was approximately the same as in the previous year.

The Information Centre publishes also two series of "Ready Information" containing data on the development of education in the U.S.S.R. and abroad as well as materials concerning progressive pedagogical experience, adopted at all-Union educational readings. In 1976, a total of 24 issues of "Ready Information" were published with the overall extent of 2,150 pages.

The Centre pays considerable attention to the publication of analytical surveys concerning topical problems in the area of education and pedagogical science. 15 surveys are published per year. Surveys which appeared in 1976 dealt with the following topics: Methodical problems of Soviet education; ways for optimising the education of personality under conditions of advanced socialism; improving the content of elementary education in schools of the European socialist countries; situation in the area of education in the advanced capitalist countries, etc.

Bibliographical and abstract series as well as ready information and analytical surveys constitute significant communication channels through which information users throughout the Soviet Union are informed on the developments in the sphere of education, achievements of individual teachers and teaching teams in different regions of the country.

We may say without exaggeration that the publication of information materials helps in accumulating experience in the sphere of education from all over the country. These materials may be seen as means for self-education and improvement in professional knowledge of various categories of workers from educational establishments, particularly teachers.

First of all, we have to improve the quality of information publications, to increase the reliability of selected materials by means of adequate transfer of the content of processed primary sources.

The workers of our Information Centre focus their attention on problems of information reliability, operativeness and comprehensiveness; in other words, on the quality of information reflected in information publications and other materials.

As is well known, scientific information corresponds to logical notions ascertained during the process of cognition, adequately reflecting objective laws governing the development of general education and pedagogical science. For this reason and according to a generally valid rule, materials are processed by highly qualified specialists who evaluate information sources in an analytico-synthetical manner. Outcomes of this processing enter the information system only once; after that, they are repeatedly used to solve heterogeneous information tasks, namely:

- selective dissemination of educational information,

- working out information publications /bibliographical lists and abstract series, survey information, ready information concerning education in the U.S.S.R. and abroad, and progressive educational achievements/,
- retrospective retrieval of documents and information.

Experience accumulated by the Soviet Centre for Scientifico-pedagogical Information suggests that best and most appropriate specialists for the production of information at an adequate level of reliability and scientific precision are primarily authors of research papers and monographic publications, collections of scientific papers and journal articles.

2. Another important means for providing information services to users is the reference information file.

Reference information files were set up in the process of providing information services by scientific libraries and information bodies and reflect the needs for improving the above process through updating the file of primary sources, setting up and maintaining a flexible information retrieval mechanism and using existing files to provide information services to specialists.

The structure of reference information file may be divided into two components: file of primary sources and mechanism for information retrieval. The stock of primary sources of the Information Centre presently consists of more than five thousand units. The information retrieval system consists of approximately thirty thousand units.

In building up the stock of primary sources, the attention is concentrated upon unpublished materials of educational research and those of limited dissemination. It includes reports on study trips abroad of workers of the Soviet Academy of Pedagogical Sciences system and those of the Ministry of Education of the U.S.S.R., information cards on completed scientific investigations, author's abstracts of theses written by candidates for academic degrees of doctor and candidate of pedagogical /psychological/ sciences, abstracts of monographs, collections, articles on pedagogy, information materials from abroad, etc.

The information retrieval system consists of subject-oriented files arranged according to main research orientations in the area of educational sciences in the Soviet Union, author card files, addressed, factographical and many other card files as well as of a number of various catalogues - periodical publications on education, information publications of the sector /and related sectors/, collections of research papers from institutes for scientific research and other materials included into the stock.

In the system of the unified reference information stock, information requirements of specialists from the given sector are satisfied by means of the "demand-response" system as well as according to systems of selective information dissemination and differentiated services provided to managerial workers.

Single demands are divided into documentation, topical, analytical, methodical and factographical ones. Up till now we have fulfilled, in the framework of the "demand-response" system, more than 2,000 requests.

Information services provided to users according to the above-mentioned systems were established in 1976. The system of selective information dissemination advises the users on current acquisitions to the reference information stock without undue delays, in accordance with their requirements /formulated on the basis of investigations concerning topics of scientific papers/.

One of the characteristic features of the reference information stock system is a permanently functioning feedback - by means of special cards the user evaluates the signal information he obtained /first-level feedback/ and also the primary source /second-level feedback/. This makes it possible to improve information service.

In the framework of the system of differentiated services provided to managerial workers, information is presently furnished primarily to managerial workers of the Soviet Ministry of Education and the Academy of Pedagogical Sciences. During the last two years /starting January 1, 1976/, the users of this system were addressed more than a thousand of signal notices.

3. A significant position in the activity of Information Centre is occupied by the elaboration of scientifico-methodical questions.

In conformity with basic orientations of development of the Soviet economy in the 1976-1980 period adopted at the 25th Congress of the Communist Party of the Soviet Union, the nation-wide system of educational information makes efforts directed at setting up a unified classification system of individual branches of science and technology, sector thesauruses and methodologies. Taking part in the above activities is also the Centre for Scientifico-pedagogical Information.

Its work in the area of investigation of information problems is illustrated by a completed research project aimed at improving tools and methods for condensation and distribution of scientific information concerning educational investigations, and at developing optimal types of information carriers respecting, at the same time, its purpose and functional particularities.

The research was based on the hypothesis that the efficiency of information materials may be increased as a consequence of:

a/ optimization of methods for condensation of the content structure of scientific texts;

b/ improvement of operational resources of information carriers.[1/]

The above research involved also attempts at solving the following specific tasks:

- to establish objective factors underlying the need for condensed scientific information;

[1/] The investigation was effected in the form of the thesis written by L. D. Kvirtil, research worker of the Centre.

- to define the substance of the process of information condensation;
- to analyze and generalize experience concerning the condensation /processing/ and distribution of scientific information in the educational information practice;
- to work out improved methods for the condensation of educational information with regard to unpublished scientific materials, and to determine ways of distribution of these materials in the following system of information flow: research work - Information Centre - research and educational practice;
- to set forth recommendations concerning the organization and methods of establishing operational contacts among scientific-research institutions /built upon freely coordinated indexing and on the basis of descriptor-type indexing language/, and those concerning means of small-scale mechanization /punched cards/ and computing technology /at the level of computers/.

The intensification of scientific contacts with information centres in Hungary, Bulgaria, Poland and Czechoslovakia is foreseen, with a view to introducing unified standards into the condensation of the significance structure of scientific texts, incorporating educational information materials into the unified international system of scientific communication, jointly verifying the system of information languages in the area of pedagogy and revising their retrieval qualities and degree of compatibility.

4. Along with traditional forms and methods of work in the area of educational information, we have been introducing also machine data collecting and processing methods based on the use of computers.

Their introduction is connected with the need for detailed consideration of theoretical, methodical and organizational questions.

The problem of "Utilization of economic and mathematical methods and computing technology in organization and management of education" has been solved by the Research Institute for General Pedagogy attached to the Soviet Academy of Pedagogical Sciences since the year 1971.

The objective of this investigation is to create an automated system of management in the sector of "School system" including the subsystem of "Education" ASPC /Automated System of Planned Calculations/. The respective activities are directed from the Central Information Computing Centre of the Soviet Ministry of Education and the Academy of Pedagogical Sciences.

The subsystem of "Planning and Registration of Cadres" includes for example the project of "Registration and planning of the number of students of general secondary schools".

The extensive experience in the area of educational information was acquired by the U.S.S.R. in cooperation with the socialist countries. Educational information constitutes an integral part of the programme of cooperation between the socialist countries in the area of education and is used as one of the means for improving the level of information of educational scientists, teachers and other workers as regards progressive experience and achievements of the Soviet Union and the Socialist countries in solving questions related to the education of young generations. Educational information is also used as a means towards improving organization and management of education and educational research. To this end we make use of various methods and forms of work. In a systematic and steady manner we develop the exchange of educational information and literature with other countries through the intermediary of various scientific institutions and libraries of the Soviet Union as well as through the Sector Centre for Educational Information of the Soviet Academy of Pedagogical Sciences and the Ministry of Education. Particularly significant is the share of the K. D. Ushinsky Scientific Pedagogical Library attached to the Soviet Academy of Pedagogical Sciences. Each year, it directs a great amount of educational literature to the socialist countries /monographs, textbooks, educational periodicals/, receiving in exchange books and journals dealing with matters related to education. Presently, the Library maintains lively contacts with 143 different scientific institutions and libraries of 31 countries, including the socialist ones. An important place in international book exchange is held by bibliographical series published by the Library, particularly such as the quarterly index of new books and articles - Literature on pedagogical sciences and education, containing the most complete information concerning educational literature published in the U.S.S.R.

A significant role in regional cooperation with socialist countries is played by the Sector Centre for Educational Information of the Soviet Academy of Pedagogical Sciences and Ministry of Education. It has established contacts with all the information bodies of the socialist countries and effects a regular exchange of information material. It forwards annually to the socialist countries all of its publications, each of which exceeds 100 pages. These include collected papers devoted to problems of preschool education, education of pupils at school, vocational guidance of pupils at school, organization and economy of education, training of educators, etc., overviews covering topical questions related to the development of Soviet pedagogical science and education, series of ready information concerning progressive experiences of individual teachers and schools in the U.S.S.R.

In the recent period, in addition to bilateral contacts, the Centre expands its activities in the field of joint regional efforts made by the socialist countries. These efforts include, inter alia, the publication of the information bulletin entitled Pedagogy and Education in the Socialist Countries. This Bulletin appears in two series - survey and thematic. The Bulletin presents abstract information concerning completed studies and those being carried out in the field of theory and practice of education of children and young people in the socialist countries. The extent of each series is 12 to 15 pages.

Prior to the joint publication of the Bulletin it was necessary to solve a number of methodical and organizational questions. These include the selection and processing of information, its condensation into a form enabling an efficient exchange of information materials, improvement of the quality of abstracts published in the Bulletin. In this context, regional information centres work out methodical materials streamlining the common efforts of the socialist countries. These documents will reflect experience accumulated by the socialist countrie in other branches of science, technology and economy. They will also take account of international standards, ensuring thus the compatibility and exchangeability of information with other regions and countries of Europe and rest of the world.

One of the important objectives in promoting the cooperation among the socialist countries consists in working out a classification of pedagogical sciences and education, as well as a pedagogical thesaurus. This would be help extending the information exchange among the socialist countries, increasing its operativeness and enabling wider utilization of computing technology. The work, connected with the elaborating the classification and thesaurus, has already been under way, and its successful completion is expected to contribute towards improving the cooperation among the socialist countries in the area of educational information and towards creating more favourable conditions for extending contacts on an international scale, as the future in the area of information will be that of machine-aided forms and methods of work.

The Soviet Union extends scientific contacts in the area of educational information also with the European capitalist countries and those of other regions of the world. Improved knowledge of Soviet pedagogues with respect to the latest developments in the sphere of education in the capitalist countries is the reflection of intesifying cooperation and mutual understanding among countries having different social systems. With a number of them, our institutions effect a regular exchange of various materials. Libraries, including that of K. D. Ushinsky, our largest library specialized in education, receive a considerable number of books and educational periodicals from France, England, Federal Republic of Germany, Scandinavian countries, U.S.A., Japan, Italy and Canada. Through exchange or purchase, the Soviet libraries receive books and educational journals from many other countries of Europe, Asia, Afrika and Latin America. On the other hand, the K. D. Ushinsky Library sends to all the above countries educational literature published in the Soviet Union.

It should be stressed that foreign educational literature received by Soviet libraries is accessible to a wide range of readers who may, in addition to drawing on book holdings of the library in their place of residence, make use also of a well organized interlibrary service. This service is assisted by the systematic publication of bibliographical lists of new books and journals having appeared abroad, informative book reviews and article summaries relating to publications of foreign pedagogues, interesting both from the theoretical and practical viewpoints. This information is given in journals such as the Soviet Pedagogy, Education, etc., published in Russian and in those published in national languages of individual Union republics. The accessibility of publications written by their foreign colleagues to Soviet pedagogues is facilitated also through activities of Centre for Pedagogical and Educational Information. A portion of its collected papers, series of ready information, and surveys published by the Centre focuses on educational matters abroad.

Steadily expanding has been also the exchange of information publications between the Soviet Centre for Pedagogy and Education and its counterparts in many other countries. In the previous period we succeeded in establishing contacts and organising the exchange of information documents with the United States information service - the ERIC system. From the U.S.A. we have been regularly receiving information bulletins entitled Research in Education, and Index of Educational Journals. These helpful publications contribute to the dissemination of information on the educational problems in the United States. We have entered into relations also with the International Centre for Educational Research at Sèvres /France/, with the Library of the London University Institute of Education that supplies us with the Educational Library Bulletin, with the Information Centre attached to the Norwegian Ministry of Education supplying us regularly with the School Research Newsletter, with Finland sending us Information Bulletin, etc.

By way of exchange, the Soviet Centre for Pedagogy and Education mails its publications to 36 addressees in various parts of the world.

The Centre established contacts also with some regional information organs. Thus, for several years we have received the Information Bulletin and the Newsletter published by the Centre of Documentation on Education of the Council of Europe - regional information centre of the West European countries.

From Bangkok we receive information publications of the UNESCO Asian Regional Centre for Education. Unfortunately, we have not yet been able to enter into contacts with other UNESCO regional centres for education.

The Soviet authorities devote considerable attention to the development of most varied forms of cooperation with UNESCO, particularly with the International Bureau of Education - leading international centre for information and documentation in the area of education. We regularly effect intensive mutual exchanges of educational literature with the above centre. The K. D. Ushinsky Library and Information Centre for Pedagogy and Education have in their holdings a number of titles published by BIE and UNESCO, or mediated for exchange by BIE.

Both parties are taking part in joint preparation of the information bulletin published under the title Educational Documentation and Information, some issues of which are specifically devoted to Soviet publications.

We regularly supply the BIE with abstracts of legislative documents, most important books and articles dealing with topical educational problems in the Soviet Union, including questions related to adult education. Soviet abstracts appear in two series - the SIAS series and abstracts devoted to adult education. The U.S.S.R. takes part also in the preparation of information materials concerning innovation and experimental activities carried out in the Soviet educational system. Unfortunately, to this date we have prepared only a few of such materials. Thus far we have not been making adequate use of even such form of collaboration as is the preparation of overviews concerning topical educational matters. We are taking steps to improve this situation.

We believe that we have contributed significantly to the cooperation by participating in the elaboration of the first variant of educational thesaurus along with the BIE. We expressed our views concerning the composition of descriptors included into the thesaurus, suggested certain possibilities for its improvement including our request for extending the list of descriptors by those reflecting terminology used by the Soviet pedagogical science.

In promoting the literature and information material exchange with the BIE, the Soviet party makes efforts at establishing personal contacts among workers and their exchange. Similarly, we enter into collaboration with other countries. In the recent period, the U.S.S.R. received many library and information workers from abroad and a large group of Soviet specialists made study trips abroad. We believe that relationships between workers of establishments for educational information constitute one of essential prerequisites for the development of cooperation among different countries in the sphere of information. Such approach, after all, corresponds to documents adopted by the Helsinki Conference.

The Soviet experience in the area of cooperation with respect to educational information suggests that there are still many unexplored possibilities. The service providing educational information might assist in promoting the cooperation among countries in the field of education, dissemination of information, imparting objective character to information, and in strengthening mutual understanding among pedagogues and education workers of various categories.

In order to promote the cooperation among educational information centres, it appears, in our opinion, appropriate to deal with the following questions:

- extension of international book and microfiche exchange;
- development of the exchange of information publications, both abstracts and bibliographies;
- mutual assistance in preparing bibliographies devoted to various subjects; elaboration of requested bibliographies;
- extension of the exchange of methodical materials on information work;
- co-operation among various information centres in the development of automated information systems.

The European collaboration in the area of pedagogical and educational information is inevitable. This meeting, organized by the Institute of Educational Information attached to the Ministry of Education of the Slovak Socialist Republic with the support of UNESCO, should make a concrete contribution towards reaching this goal.

EDUCATIONAL INFORMATION SYSTEM IN FINLAND INCLUDING INTERNATIONAL INFORMATION EXCHANGE

O. K. Kyöstiö, Director of the Institute for Educational Research, University of Jyväskylä, Finland

1. The position of educational information services in Finland

In Finland the tasks related to the dissemination of educational information in Finland and in other countries have been divided between the bodies taking part in this activity, such as the Ministry of Education, its various departments and especially its Department for International Relations as well as committees and similar bodies set up by it, the National Board of Education, the National Board of Vocational Education and the Institute for Educational Research founded in 1968 in the University of Jyväskylä. Cooperation has been arranged so that each party concentrates on informing about the questions it is responsible for and in which it has the best expertise.

The division of labour can be described as follows: the Ministry of Education, its departments and offices as well as institutes and committees subordinated to it disseminate information about

- educational policy,
- science and research policy,
- general planning of education.

The National Board of Education disseminates information about

- the educational system,
- educational development,
- experiments,
- planning,

belonging to its field of competence.

The National Board of Vocational Education disseminates information about

- the educational system,
- educational development,
- planning,
- experiments,

belonging to its field of competence.

The Institute for Educational Research is responsible for the dissemination of information about educational research in the whole country. For this purpose the Institute has a department of its own, the Department of Information and Documentation. The work of the department is described below in more detail from the point of view of the receivers of the information, the communication channels and the contents.

2. The national information services carried out by the Institute for Educational Research

Information on the results of educational research is disseminated to decisionmakers and planners, researchers, teachers and teacher educators, producers of teaching materials, and the general public. Information is differentiated according to the prerequisites and needs of the receivers.

A central part of the information services is constituted by the publication of two report series and the Finnish Journal of Education Kasvatus. By means of these publications information is disseminated about educational research and the utilization of its results. 275 reports have so far been published in the series "Research reports from the Institute for Educational Research" and 94 reports have been published in the series "Bulletin". The Finnish Journal of Education Kasvatus, founded in 1970, appears six times a year /about 400 pages/, and contains, in addition to articles, regularly various kinds of information, e.g.

- an annual bibliography of Finnish educational literature /about 1 000 references a year/,
- an annual list of the most recent publications of educational institutes,
- an annual list of M. Ed. theses,
- the lectio preacursoriae of Ph.D. dissertations,
- the statements of official opponents on Ph.D. theses,
- summaries of educational licentiate theses,
- an annual list of the research staff of educational institutes.

This activity calls for cooperation with university departments of education. The dissemination of scientific information generally requires a documentation and information system which meets both national and international needs. An important phase in this activity is the compulation of the lists of completed educational research and educational research in progress, as well as the above-mentioned educational bibliography, Information on educational research projects in progress in Finland is collected and published yearly by the Institute for Educational Research. Likewise information on completed educational research projects is collected and published.

Teachers are supplied with abstracts of the most recent studies which are sent for publication in their professional press once or twice a year. Similarly, information is also given about other research projects under planning or in progress which might interest the teaching profession.

3. Contacts with other countries

Information services are an essential part of international research cooperation; in the Statute on the Institute for Educational Research the institute has been assigned the task of educational information diffusion to other countries as well as in Finland. This can be expressed more concretely in the form of following task areas:

1. To make Finnish educational research known in other countries.
2. To take part in the organizing of symposia, conferences and meetings intended for educational researchers and to promote joint publication activity.
3. To take part in both manual and computerized international documentation work in the field of education.
4. To promote cooperation with international cooperative bodies and authorities.
5. To promote bilateral exchange in the field of education and to increase the role of the Institute for Educational

Research, which is the national centre, in concrete exchange events.

6. To develop informal contacts with foreign researchers.

4. Proposals for the development of educational information and documentation services

From Finland's point of view the importance of information services is increasing. It is being re-evaluated and worked at both in CMEA-countries and in OECD-countries. The previously mentioned Finnish science policy programme emphasizes that we need surveys on the present state and forms of international research cooperation, and programmes for measures in the next few years which are based on these surveys. This kind of international surveys are considered necessary in Finland also in the development of information and documentation services.

Exchange of educational research results could be improved if each country taking part in the EDICO-meeting could make available sufficiently often updated information as follows:

1. Organisations disseminating education information.
2. A survey of the supply and demand of information in the field of education and teaching in each country.
3. A survey of the present possibilities of the libraries and information service institutes in the field to meet the information need.
4. A description of problems observed in international information services.
5. Each country's proposals for removing or alleviating the problems.

The information regarding these five items has no doubt been collected several times, but it is, however, still difficult to obtain, it is undated and insufficient.

Secondary and tertiary sources which contain information on information are of course of great importance. Without them it would hardly be possible to obtain exact bibliographical references. An undisputable disadvantage of large reference compilations is, however, the lag which unavoidably appears between the appearance of the primary publication and its recording in the secondary source. Therefore, it would be important for a small country to develop direct channels through which the exchange of information would be quicker.

Computerised information systems may reduce this lag somewhat. The use of these files is, however, hampered mostly by the high European telephone tariffs. The problem is expected to disappear with the development of information satellites. Finland ought to start working to secure the possibilities of researchers to use computerized information systems at a reasonable price.

The EUDISED-project /European Documentation and Information System for Education/ is a good example of long-term development work which has resulted in improved information diffusion in the countries which have signed the cultural agreement of the European Council and are thus members of the Council for Cultural Cooperation. The dissemination of educational research results has thus progressed a good deal. The EUDISED-project has worked in quite an economical way: national centres have collected the information and sent it to the coordinating documentation centre. In Finland participation in the EUDISED-project has shown that the methods of information diffusion regarding educational research in progress and completed educational research have not developed as quickly as the research activity itself. It seems that in a small country the development of information services in the field of social sciences has not been considered important enough by those who decide about the grants. The Institute for Educational Research must give yearly resources for the maintenance of the EUDISED-project although these resources should really be used for actual research work. At the same time the Finnish science policy programme for this decade emphasizes that a country which has small scientific resources should give a greater proportion of the resources to information services and the utilization of scientific information than other countries.

The information service processes in the field of education and their computerization could probably be developed through cooperation as follows:

1. By exchanging experiences about the development of computerized data systems and library service systems.
2. By exchanging experiences about information materials recorded on machine readable data files in the field of literature, information publications and documentation.
3. By exchanging experiences about the development of the recording of books, articles from periodicals, maps, records, and audio- and videotapes.
4. By expanding bilateral exchange of books between educational libraries in different countries.
5. By translating more scientific literature and documents than at present, which again calls for joint compilation of adequate thesauruses in the field of education.

6. By informing about translations which have been made from a less widely known language to English and some other widely spoken language.

7. By taking care of the recording of research in progress and the dissemination of scientific information as an important task from the point of view of the development of education and the planning of science and research policy. Each country should see to it that the recordings made in it really contain all the central information in the field. It would also be desirable if the governments could be given recommendations in the above mentioned questions.

THE SYSTEM ERIC - REMINDERS OF HOW IT CAN HELP YOU

Ted Brandhorst, ERIC, Bethesda, Maryland, U.S.A.

It cannot be said that all those engaged have thoroughly understood the importance of the work of the Educational Resources Information Centre /ERIC/. We often meet members of the education community who have heard the name ERIC and they know that it is an information system that deals with education. But they seldom know much more than that. The accompanying "crib sheet" provides some basic facts. Beyond that, I shall discuss the organization of the system ERIC and remind you of its important functions. The system ERIC having proved itself demonstrably, should now move toward coverage of additional types of educational resources.

The system ERIC was founded in the year 1966 within the Office of Education. In 1972 it moved to the National Institute of Education. Basically, ERIC was designed to achieve bibliographic control over the literature of education. Its relatively complex structure includes a small central funding and monitoring group, a network of contractors, and /currently/ 16 clearinghouses assigned to non-profit organizations. Each clearinghouse is responsible for dealing with information in one segment of the field of education.

The clearinghouses collect and process literature in their respective areas. They pass the results of this work on to other contractors for dissemination. The clearinghouses also analyze the literature and produce various publications of their own.

A central editorial and computer processing facility accepts the results of the clearinghouses' work, converts them into magnetic tape, and then processes this tape to produce the monthly catalogue, Resources in Education /RIE/. A second contractor performs this same function for the monthly catalogue, Current Index to Journals in Education /CIJE/. A third contractor takes the noncopyrighted material announced in RIE, converts it to microfiche, and makes it available to the public in either microfiche or photocopy form. The U.S. Governement Printing Office also can, in a sense, be considered a part of the system in that it publishes and serves as subscription agent for Resources in Education.

ERIC's Organization

The designers of the system ERIC, working in the mid-sixties, were very conscious of the extreme decentralization of U.S. education. State and local governmental institutions retain a great deal of autonomy, and numerous large and powerful professional groups divide many responsibilities on either a functional or subdiscipline basis. ERIC designers felt that a decentralized system would reflect exactly the field itself. The network of clearinghouses that resulted from their thinking has been more successful than it was originally hoped.

To a certain extent - that is probably not feasible for a single monolithic centre located in Washington - each clearinghouse knows its specialized area, including where to obtain documents, the professional organizations, the conferences, the journals, and the specialists.

The users are therefore able to "enter" the ERIC system by contacting the particular clearinghouse which best understands their needs. The list of the clearinghouses at the end of this article will aid potential users.

A Total Information Service

The ERIC system not only cites documents, it makes them available to users. Since the very beginning this constitutes a necessary component of a total information service and has proved to be a wise move. By definition, the so-called "fugitive" literature that ERIC deals with most particularly /technical reports, presentations, project descriptions, curriculum materials, government documents/ generally goes out of print in a few months of being published. If the ERIC system had not been designed to provide the documents it processes and cites, user frustration would probably have doomed the system long ago.

The mechanism for providing copies of the documents cited by the ERIC system is the ERIC Document Reproduction Service /EDRS/. EDRS places all noncopyrighted material on microfiche and sells either microfiche or paper copies made from the microfiche. ERIC documents are available from EDRS on either a subscription or on-demand basis. More than 600 libraries around the U.S.A. and the world subscribe to ERIC microfiche collections. Readers can write to EDRS /address on the crib sheet/ for price information and order forms.

Availability of the material is regarded as so important by the ERIC system that it is one of the requirements for accession and announcement in RIE. The individual documents must be available from either EDRS or another specifiable source. ERIC will not announce a document for which it cannot cite availability.

ERIC as an Archive

Before the days of the ERIC system, reports submitted by education contractors to the Office of Education received a modest initial distribution. Then they sat on the project officer's shelves for a time, eventually got shifted around or sent to a records centre to free up space, and finally disappeared completely. Who knows where those reports of the 1950s and 1960s are today?

A cardinal rule of the research game is that those who cannot retrieve their past are condemned to relive it. The ERIC system created, for the first time with respect to an entire segment of the literature of education, a mechanism for recording the past and retrieving from that past. Whichever way one views this record, we all can agree that the weeding-out process should be a rational one. ERIC, as a permanent archive of documents, provides at least the basis for a rational assessment of education literature.

The great archival value of the ERIC system, where documents are forever "in print", is sometimes not immediately recognized by its users. Time and again an organization that initially would not let ERIC film a document, eventually distributes all of its own copies and then finds out that they need more of them very much.

ERIC should be regarded by the education community as a rich living archive of the "fugitive" literature of education, for as the years pass, the vast majority of ERIC documents will be available from no other readily accessible source.

System ERIC and Information Sharing

Educators who have something worthwile to say to their colleagues should regard the ERIC system as an unparallelled opportunity to communicate. ERIC even invites you to write your own abstract and suggest your own indexing terms.

Documents accessioned by ERIC and announced in RIE receive a truly remarkable dissemination. Copies of RIE are distributed to virtually every major library in the world, about 5,000 in all. No one knows for certain how many times RIE is consulted during the course of a year at its many locations. The magnetic computer tapes are distributed to more than 60 organizations, which use them to perform thousands of computer searches.

Approximately 1,000 terminals in schools, compánies, universities, and other organizations have on-line access to ERIC through two major vendors: System Development Corporation and Lockheed.

More than 600 active microfiche collections, receiving in all some 10 microfiche cards each year, provide users with an opportunity to examine the actual texts to which citations refer. On-demand requests to EDRS alone for microfiche and photocopies total around 50,000 items per year.

In summary, ERIC citations are disseminated to an audience of millions, and the documents themselves are disseminated to hundreds of thousands of users.

ERIC as a Partnership

The ERIC information clearinghouses and other supporting contractors cost the government about 4 million dollars a year. Additional funds flow into the system from subscribers to the abstract journals, purchasers of clearinghouse publications, purchasers of microfiche and photocopies, organizations that buy the magnetic tapes for search purposes, and subscribers to the on-line retrieval services.

Essentially, the government subsidizes the ERIC network by paying for the creation of the fundamental data base. However, the system philosophy is that all users of the data base should pay for it.

We have in ERIC, therefore, a system based on a partnership of several sectors of the economy: a government component at the core, with contractors from the academic and professional /non-profit/ realms supplying the subject and disciplinary expertise. Then those are contractors from the for-profit sector supplying the capital-based high-technology skills /e.g., computer processing, photocomposition, micrographics/ and the entrepreneurial skills. The federal government provides the basic data, but users pay subsequent costs. The system ERIC must meet the demands of the marketplace in order to survive. This government-contractor-user partnership permits the ERIC system to accomplish its objectives with the essentially level budget it has had for the past six years.

Goals for the Future

ERIC's original goal was bibliographic control over the "fugitive" literature of education. It later added the journal article literature. With RIE and CIJE, the system ERIC has essentially achieved this goal. One exciting possibility that lies ahead for ERIC is to employ the techniques it has learned over the past years to make other educational resources more generally available. Indeed, this direction seems inevitable as lines between different media blur, as resource producers become more imaginative, and as users become more sophisticated in their information practices. Also suggesting this new horizon are recent activities on the international documentation scene, where Universal Bibliographic Control /UBC/, after years of suspended animation, is making progress. UBC's objective is for each country to take responsibility for its own bibliographic output and to feed information into the world's bibliographic data bases.

No discipline has ever attempted to parallel UBC with respect to the output of that discipline. The traditional abstracting services of the various disciplines, for all their massiveness, are essentially limited, just like the system ERIC, to a fraction of their total resources.

What do these resources include? Examples would be patents, dissertations, textbooks, phonodiscs, software, laws and regulations, videotapes, experts /human resources/, ongoing research projects, and statistical data.

Could one organization handle such immense variety? Probably not. Such a project would be technically and monetarily too difficult. Why then even talk about it? Because other arrangements are possible, and here we come back to what the ERIC system has learned about decentralization. Imagine a federation of organizations, all distinct yet allied on behalf of a common objective. Each of them autonomous and actively pursuing its own goals, yet agreeing, as members of the federation, to meet certain minimum standards and to guarantee a certain level of coverage, service, continuity, etc. Such a federation could be constructed over the years so as to encompass all types of educational resources. The government would not itself process or pay for the processing of the massive amounts of materials involved, but would take the position to see that somebody processed such materials, thet they were processed according to certain minimum standards and made available to the public at fair prices, and that, if the processor of record should stop, somebody else would pick up the task.

I believe that such a structure, whether monitored at the government or the professional level, is eventually inevitable for all disciplines. ERIC is in an ideal position to take the lead in achieving this goal for the field of education. Under the enlightened sponsorship of the National Institute of Education, it just may be given the chance.

Three Case Studies

The Curriculum Committee of the Cupertino /California/ School District asked one of its members, a sixth-grade math teacher, to find some effective and innovative ways of teaching elementary school students the metric system. After going through the card catalogue of the Cupertino Public Library, the teacher went to the reference librarian to see if she could suggest any further sources. Since the Cupertino Public Library is equipped to do computer searches of the ERIC data base, the librarian suggested a search to uncover citations for research papers and curriculum guides that would not normally be housed in a public library or be available from a bookstore. The search turned up 50 document citations on methods of teaching the metric system in elementary schools, some of them bibliographies. The teacher was able to read the documents that interested him in the library's ERIC microfiche collection in Cupertino. He brought 12 of these documents to the committee's attention as discussions of possible guidelines to be used in revising the math curriculum.

A health education teacher in Columbus, Ohio, concerned about the growing abuse of alcohol among high school students, visited the ERIC information clearinghouse at Ohio State University to find names of recent films on teen-age alcoholism. She did a manual search of ERIC, using RIEs from 1974 to the present. A new descriptor in the ERIC system "Filmographies", and the descriptor "Alcohol Education" proved particularly useful. The teacher found three documents which listed films specifically dealing with teen-age alcoholism, along with their distributors and prices. She planned to integrate at least two of the films into her lesson plans for the next year. She made copies of the lists and showed them to interested colleagues.

The coach of the women's basketball team in a small New England college wanted to enter the team in the area's intercollegiate women's basketball league. The administration denied her request, stating that interest in women's basketball was not sufficient to justify the expense entailed. Convinced that the morale and skill of the team would benefit by joining the intercollegiate league, the coach called an information centre in Cambridge, Massachusetts, with her problem. The centre sent her a list of references from ERIC dealing with the content and implicatio ns of Title IX and a copy of one particularly relevant document. Armed with this information, the coach again approached the administration, which reversed its previous stand and approved her request.

SCIENTIFIC PEDAGOGICAL INFORMATION IN THE PEOPLE'S REPUBLIC OF BULGARIA

V. Mirtcheva, Scientific Secretary; Raina Todorova, Director, Pedagogical Research Institute, Sofia, People's Republic of Bulgaria

The optimalization of information processes is one of the basic tendencies in the perfection of management in the field of education. The improvement of information services helps scientific decision making for management at all levels, and the application of scientific attainment and progressive pedagogical experience to the educational practice.

1. National policy in the field of information and education

The unified State policy is applied to information services in the People's Republic of Bulgaria.

By its Decree No. 16, of May 10, 1972, the Council of Ministers approved the task to create the Uniform System of Social Information in the country, as a System of comprehensive information services. Its objective consists in further dissemination of information and information interaction of all the social management authorities in the country, while ensuring the inevitable preconditions for achieving optimum economic and social targets, and the utilization of manpower, natural and other resources to the optimum degree.

This task is effected by the Committee for Uniform System of Social Information. It should ensure unity in planning, coordination and methodology, concerning the formation and activities of the Uniform System of Social Information.

Among its fundamental functions prominence should be given to the function of ensurance of prompt and reliable statistical and other information, and to the analysis of economic, social and cultural life of the country, required by various levels of the social management.

The information system in the field of education is an important part of the uniform state policy in rendering informational services.

The National System of Scientific and Technical Information, approved by the Central Committee of the Communist Party of Bulgaria and by the Council of Ministers, by its Decree No. 8, of March 15, 1973, stipulating its conception, is a subsystem of the Uniform System of Social Information. This conception anticipates the rendering of scientific information services, information bodies of the individual subject-oriented subsystems of scientific information. In the field of education the Centre of Pedagogical Documentation and Information is such a subject-oriented organ. It was set up in the sixties, in accordance with the Decree of the Minister of People's Education, and in accordance with two resolutions adopted at the tenth Session of the UNESCO General Conference, concerning the establishment of national pedagogical information organs. Its creation launched the system of scientific and pedagogical information in Bulgaria.

The Centre of Pedagogical Documentation and Information /CPDI/ represents the main subject-oriented information system in the field of pedagogy, instruction and education. The CPDI was set up at the T. Samodumov Pedagogical Research

Institute, and provides its services to the Institute, to the Ministry of People's Education of the People's Republic of Bulgaria, and to the educational practice.

The main task of the CPDI, concentrating domestic and foreign information sources in the field of pedagogy, instruction and education, resides in gathering, processing, storaging and making accessible to scientific pedagogical information. In the Centre special attention is devoted to innovation studies in other countries, particularly to scientific pedagogical successes and experiences gained in the U.S.S.R., and in other socialist countries.

The CPDI activities influence directly the effectiveness of scientific research in the Institute of Education, as well as the work of the Ministry of People's Education as well as other institutions and organizations engaged in problems of education. The Centre ensures information inevitable for scientific management of work, and for the application of the scientific attainments to practice.

The CPDI helps indirectly also the local centres of pedagogical information within the system of the Ministry of People's Education with the methodical standardization and coordination. These local organs of scientific and pedagogical information are developed at the centres for teachers' training and further education /the Institute for In-Service Teachers' Education, various institutes for teachers, regional pedagogical cabinets/. Their specialized pedagogical libraries render referral and information services to teachers, on the basis of materials, elaborated by the subject-oriented and national information bodies.

Also the District Statistical Bureaus, which collect, disseminate, store and distribute mostly statistical information to all spheres of the national economy, including education at the district level, belong to the local information organs.

Apart from the above-mentioned basic state authorities, also the following institutions are active in the dissemination of educational information:

- Institutes for the In-Service Teachers' Education, by organizing various courses, seminars, and other forms of improving teachers' knowledge, by disseminating positive experiences, etc.;
- The Centre for Teachers' Postgraduate Studies in Sofia, at the Sofia K. Orkhidsky University, by various forms of postgraduate studies;
- The Central Directorate of Pedagogical and Methodical Journals, by publishing 16 pedagogical and methodical periodicals and the Utchitelsko delo /Teacher's Work/ newspaper;
- The management of the Teaching Aids enterprise, at the Ministry of People's Education, by producing teaching aids, and by supplying educational facilities;
- The Narodna prosveta /National Education/ Publishing House, by publishing pedagogical, psychological, and methodical literature;
- The Bureau of Production and Economic Information at the Ministry of People's Education;

- The Computing Centre at the Ministry of People's Education, utilized as the teaching basis in the training of secondary-school students in such subjects as: programming, equipment and operation of the computing technique; and it processes, at the same time, information of pedagogical, statistical, and economic character, for the needs of the Ministry of People's Education, as well as information necessary for sociological and other research of the T. Samosudov Educational Research Institute, etc.

2. Users of information and their needs

The creation of a well-organized, effective system of information in the field of education depends greatly upon the users and their needs. The perfect knowledge of functions of individual management organs in the field of education, and of other information users is an inevitable condition of optimizing their information needs.

Basic information users within the field of education can be divided into several large groups, according to their activities:

- Managerial workers in the field of education, and in other fields of the national economy. Management organs in the field of education /central and local/, respective ministries and central administrations; local organs of the State power, management of socio-political organizations; organs of the Union of Bulgarian Teachers; management of economic organizations, etc., belong to this group.

This group of users needs statistical, scientific, pedagogical and other information, for direct managerial activities. Apart from that they need information on the basic tendencies of development of education in the world so as to determine correctly the trends of development of education of Bulgaria.

- The users of information, engaged in scientific and research activities, in training and improving qualification of the pedagogical personnel - scientific workers, lecturers at universities and in various institutions for teacher education, who either join scientific teams, or do individual research work, and others, need statistical, current scientific pedagogical information on novelties in the field of education and retrospective information on problems investigated in their work.
- The most numerous group of information users is formed by pedagogical personnel - headmasters, teachers, tutors and educationists of all kinds and levels at educational and out-of-school facilities. Information on novelties in pedagogical theory and school practice, on results of the scientific research in the field of education, on experiences of their colleagues in other parts of the country, and in other states are of vital importance for them.

Many of the above-mentioned users of information within the field of education are simultaneously also the creators of information.

The above classification of information users in the field of education includes basic groups, but it is incomplete. For instance, parents, the family and society, representing a large social group, may be mentioned as an individual category of users.

Until now entire and complete research of information needs in the field of education has not so far been undertaken. This question has been partially examined in the individual research projects. Further elaboration of the problem of creating an automated system of information and management in the field of education, the question of determining users, and their information needs, as well as the optimalization of their requirements belong to the essential questions in this complex of problems.

3. Training of personnel in the field of information activities and training of users for information utilization

The information specialists having university education and teachers' qualification, librarians, economists and technical workers are engaged in information activities in the field of education. When improving their professional training, various forms are used:

- postgraduate courses, regarding problems of scientific information, bibliography and librarianship. The courses are organized by the Sofia K. Orkhidsky University, the Central Institute of Scientific and Technical Information /CINTI/, and the Institute of Improvement of Information Workers' Qualification /IPKIR/ in Moscow, in the form of full-time study or evening classes;
- seminars, devoted to topical problems in the field of scientific information.

The workers of the information authority attend language courses, in order to improve their qualification in foreign languages, organized in the People's Republic of Bulgaria, or abroad /the U.S.S.R., France/.

Bulgarian universities include in their curricula the use of scientific information. In accordance with the Decree No. 42 of the Council of Ministers of the People's Republic of Bulgaria, of the year 1967, on the improvement of organization and activities of the uniform system of scientific and productional technical and economic information, the curricula of more advance university students include also lectures on the organization and utilization of scientific information.

Proceeding from the principle that the efficiency of scientific information depends not only on the training of the information authority personnel, but also on the training of the users, the Centre of Pedagogical Documentation and Information, in the interest of improving information user training:

- publishes materials, revealing possibilities, offered by the information organ, and acquainting users with the method of utilization of the individual holdings;
- forwards technical guidelines, etc. /on the study of literature, on the essential rules of describing the published works, etc./, necessary for the improvement of the users' bibliographical culture;
- organizes lectures on tasks of the information organ, on various types of scientific and pedagogical informational

publications, their informative value and the method of utilisation;

- provides oral information, and advisory service on the pages of the pedagogical press.

4. Some tendencies of improving the information system

We have determined the following main objectives for improving the national information system in the field of education:

- improvement of the present system of indicators;
- acceleration of information processing, and its extension to users in the necessary form,
- increased reliability of information, by means of its instruments - forms, directives, regulations, and the like.

We are of the opinion that the major tasks in connection with improving information in the field of education are the following ones:

- complex description of interrelationships between the various systems;
- coordination of information flows,
- consistent and systematic elaboration of problems of the automated information and management system in the field of education, comprising basic functional subsystems such as are: pedagogical process and educational results; executive, teaching and scientifico-pedagogical cadres; pupils' fluctuation; material and technical basis of education; scientific and pedagogical information; etc.

The growing requirements on information, in the interest of perfecting management in the field of education, call for unified efforts of informational workers of the individual countries. Attention should be paid to those spheres having presently priority for national information systems in Europe and throughout the world.

The decisions made by the Helsinki Conference on Security and Cooperation create new possibilities of furthering bilateral and multilateral cooperation among States, and expanding the information exchange between the individual UNESCO member countries.

Further improvement, particularly of the activities of national information systems, on the basis of studies concerning tendencies of educational developments in the world as well as trends of optimizing information processes in the field of education management, constitutes an inevitable condition for reaching this objective.

Information activities in the field of education are extensive and many-sided. The results achieved in their improvements can be considered only as the beginning. They indicate what should be done in the future, since there still exist many problems awaiting solution.

The perfection of national information systems - among other things also through the intensification of mutual exchange of information between regional systems as well as on the international scale - will help transform these systems into the principal factor of efficiency growth in education.

INDEXING SERVICES OF NORDIC EDUCATIONAL PERIODICALS
A DESCRIPTIVE AND EVALUATIVE APPROACH

Kjell Rotnes, Norwegian Educational Library at the University Library, Oslo, Norway

Educational periodicals play a prominent part in information generation and dissemination in Norway. Surely, geographic as well as economic circumstances specific to the country add to the usefulness and importance of the educational journal as an information channel and a forum for discussion. As an information carrier the journal article is valuable, but easily overlooked, hard to locate and short-lived if left by itself. The discontinuance of a national index to periodicals/last issue covering the year 1965/ makes it currently imperative to deal with educational periodicals in a satisfactory way. Being a small country it is even more important to nurse and promote national creative thinking and activity in the field of education, where innovation and growth necessarily must be rooted in the home soil.

Furthermore, Norway is very much dependent upon taking impulses and information from abroad. This is especially felt where national resources are insufficient e.g. due to lack of suitably sophisticated instruments developed for work, few people working in specialist areas, etc. Journals from abroad represent a possibility to get a fast, continuous and broad information flow.

This is the background for the initiatives reported below on services to get a firmer grip on the material from periodicals of education.

A description will be given of two indexing services, the difference between the two will be pointed out. A small survey is at present being carried out by the library to ascertain the views of editors and users on the service. Preliminary trends from this survey will be reported.

Based on experiences dating back to 1955 of systematic and continuous indexing of periodicals, the first organized distribution of cards outside the library itself, was started in 1968, when a documentation service for adult education was established. The basis of the service was placed upon analyzing about 120 periodicals - national as well as foreign - within the field of adult education. The target audience has been moving between 280 and up to 1,000 organizations and institutions. The recipients get 300 - 350 cards annually in 5 or 6 batches, each covering 50-60 articles. For the convenience of the users /who usually do not have library facilities/, the documentation cards are replaced by offset--produced pamphlets. The articles are given descriptors from an authority list developed at the library and they carry annotations of up to five lines.

The criteria for selecting material are placed high. The procedures of selection and preparation of the material are administered as a combined enterprise between library staff and experts working in the field.

A separate and broader indexing service was entered upon from 1971 when the library started to duplicate those cards in its indexing programme which referred to articles from Scandinavian periodicals. These documentation cards were distributed free to the teacher training institutions, main public libraries and central educational authorities. Between

80 and 90 institutions receive weekly about 100 cards. Thus 2,000 - 2,500 articles are made accessible for a broad audience, as the library supplies free copies of individual articles upon request.

The selection criteria for this information service have been under constant critical examination. Originally - when the library indexed for its own purpose - the selection had been done on very broad lines. When the distribution to other institutions started, it was assumed that a more selective approach should be adopted. Recent information proves, however, that there is a broad consensus that the criteria for selection should be moved down.

A number of journals are covered by both indexing services. It is thus possible to compare to see how the criteria are working out on a fairly large material over a span of time. For material delivered to users of the documentation service for adult education a close tally is kept and published. We hope to be able to bring this material under scrutiny at a later stage to see if trends or conclusions can be drawn from it. So far it is obvious that a number of seemingly small and insignificant journals bring a high proportion of articles to both services, and that the annual number of articles from various journal groups are stable.

The money and manpower invested by the library in the tasks described above represent only a fraction of the economic and professional investment already spent in the production of periodicals. The library functions of indexing and dissemination are seen as a fortification and broadening of work already under way. This point of view has led to attempts to organize certain vehicles for joint evaluation of the information product and the methods of information dissemination. One of these is the issuing of frequency lists or source catalogue, where each periodical is listed with the number of selected articles taken. Through the years these frequency lists have been used extensively for self-corrective purposes.

Based on these lists and on other relevant material an invitation was sent this spring to 20 editors of medium-sized educational journals. They were asked to make a close evaluation of the library's selection criteria, use of descriptors, etc., for their own journal over the last 3 years. All but one agreed to participate. They were also at the same time informed that similar invitation was going to be sent to selected users, 2-4 persons for each journal.

The material is still coming in, but there seem to be a clear trend in the evaluation. The editors find that more material should be included. Regarding the use of descriptors there are conflicting attitudes, as quite a number would prefer more use of general terms. Very few advocate specification of terms. The reason for this may be that our systems are purely manually operated which leads to a mid-stream approach of using 1-3 descriptors for each article.

The annual number of all articles found in the individual journal has been counted several times over the years. This has served to establish a "figure of total quantity" for each individual journal /or cluster of journals/, and this makes it possible to relate the number of articles selected for different services to a common denominator.

In the sketch provided above I have almost exclusively kept my eyes on the home situation. This is not only done out of considerations of time, but I feel that we must adequately develop the smallest wheel in the machinery so that we can feed material into the machinery of sub-regional, regional and international levels. The real crux placed before us to grapple with is to develop comprehensive national - regional - international information network for education. I wish EDICC-2 every success in this attempt.

FORMATION OF THE INFORMATION SYSTEM IN THE FIELD OF EDUCATION IN TURKEY

Ercüment Kuran, Professor of Faculty of Social Sciences and Management, Hacettepe University, Ankara, Turkey

In Turkey, as in most states, the development in the social, economic and cultural life culminated in the years 1960s and 1970s. The democratic régime, definitively enthroned after the Second World War, has encouraged national enthusiasm, the growth of which has not stopped, even in spite of some temporary crises. Social and economic development in the country as well as in the towns has called forth ever more urgent demands upon the extension of education. In order to satisfy the demands of the Turkish nation the Ministry of Education had to extend individual services even to the most remote villages. The necessity of creating the information system and documentation for the responsible officials of the Ministry of Education of the Turkish Republic came to the fore.

The Ministry of Education war entrusted with the establishment of the educational network. It came into existence in the year 1926 as the main institution entrusted with the elaboration of principles of management in the field of school system and education. The organisational component - the Library and the Documentation Centre of the Ministry of Education - was crated in the year 1966. It was truly successful in collecting necessary publications for the Ministry. Furthermore, since its foundation it has followed the preparations of research materials concerning education. Along with this work it also collaborates very closely with the computing centre of the Ministry, launched in 1953. Unfortunately, the equipment of the computing centre does not enable the automatic classification of the collected materials in the library and in the documentation centre. In spite of that, information concerning the field of education has been exchanged satisfactorily through directorates of education existing in all 67 Turkish provinces. The Ministry of Education owns Milli Eğitim Bakanlığı Tebliğler Dergisi, a weekly, issued since the year 1939.

Rapid industrialization of the country since the 1950s has compelled the Turkish Government to put special emphasis upon vocational and technical education. In the year 1960 the Bureau for Study and Planning of Vocational and Technical Education came into existence. The mission of this Bureau is to prepare reports of vocational and technical character in the framework of the Ministry of Education. This Bureau was reorganized in 1970, and it was given the name the Bureau for Study and Programme of Vocational and Technical Education. This office has the task to prepare reports concerning vocational and technical instruction, and also the improvement of statistical material regarding vocational and technical schools. This institution ensures also the publication of the monthly bulletin Milli Eğitim Bakanlığı Mesloki vo Teknik Öğretim Haber Bületeni.

On the other side, the extension of education has become necessary and urgent for the rural population, because the development in the country took place parallelly with the industrialization of Turkey. In 1960 the General Directorate for Adult Education was founded, falling within the competence of the Ministry of Education. It organizes and controls adult education, and it has succeeded in forming a network of local directorates in every province in Turkey. Information concerning adult education has been exchanged by means of directorates for adult education. The bulletin, which is issued six times per year under the title Halk Eğitimi, facilitates the exchange of information and dissemination of novelties on various activities of the General Directorate for Adult Education.

It is evident from this very brief paper that the foundations of the information system in the field of education in Turkey have already been laid. There are still many insufficiencies. First of all, the integration of the information system has to be implemented with the help of the Library and Documentation Centre of the Ministry of Education. The computing centre of the Ministry of Education should be modernized and supplemented with adequate computing technique. The system of educational information in Turkey must be integrated into the system of European countries. In order to achieve this goal, Turkey needs the help of competent specialists. The Ministry of Education intends to strenghen the cooperation with faculties and departments of the Turkish universities, and it is ready to accept the technical help of UNESCO for the development of its information system in the field of education.

TRENDS IN THE DANISH EDUCATIONAL DOCUMENTATION

**Robert Hellner, Head of the Danish Pedagogical Library,
Copenhagen, Denmark**

In Denmark, as most probably in most countries, we have several kinds of educational information and documentation:

- Information to the public on educational policy, legislation, etc.
- Information and documentation for teachers on textbooks, and teaching aids.
- Information and documentation for administrators and school authorities on school systems and school policy in other countries
- Information and documentation for administrators and research workers in other countries on the Danish school system, educational policy and educational research.
- Information and documentation for teachers on results of educational research and on educational innovation.
- Information and documentation for students, research workers, and high school teachers on educational research and innovation.

As regards the first point, information addressed to the public on educational policy, legislation, etc., there is a long tradition of a very open attitude on the part of state agencies towards the daily press, radio and television. Furthermore, as the result of two committee reports from 1967 and 1977, the State Information Office was set up in 1976 in order to assist the state agencies in improving their information. The Ministry of Education has used the service of this office concerning the information on the 1975 Act on our primary and lower secondary schools /"Folkeskolen"/.

Information earmarked to teachers on textbooks and teaching aids is given by "Amtscentraler for Undervisningsmidler", i.e. provincial centres for educational aids which have collections of textbooks and teaching aids, catalogues, etc., and equipment so that teachers themselves can make teaching aids.

Those provincial centres are subordinated to "Landescentralen for Undervisningsmidler" /the National Centre for Educational Aids/ having several duties, for example establishing contact between users and producers of teaching aids, negotiation of contracts with producers of educational aids, including the State Television and Radio and the State Film Centre, and what is important in this connection, they produce annotated bibliographies of Danish textbooks and of teaching aids available in Denmark. The annotation shall be quite neutral and must not say anything about the educational value or the value of the contents. As the institution is rather new, these user-guides have not really started.

Information for administrators and school authorities on school systems, school policy, etc., in other countries is provided by the International Relations Division at the Ministry of Education, the UNESCO National Commission, the Adviser on Educational Policy in Other Countries in the Ministry of Education, and the National Library of Education.

Information for administrators and research workers in other countries is given by the International Relations Division at the Ministry, the UNESCO National Committee, and the National Library of Education. In general, the first two bodies answer questions concerning school legislation, educational policy, etc., the questions about literature and educational research being answered by the Library. Furthermore, a short time ago, there was set up a post of an information officer in the International Relations Division. This post is filled by a woman, a pedagogics graduate, who has been for one year a librarian in the National Library of Education, and she will work in close cooperation with the Library.

Danmarks Paedagogiske Bibliotek /the National Library of Education/ is entrusted with the function to be the central library for pedagogical literature and child and youth psychology. Furthermore, it is a centre for documentation, as a service to ministerial councils, committees and working groups. It assists teachers and students by providing information about educational methods, instructional aids and results of educational research.

The Library represents Denmark in relation to various international documentation systems, for instance the Danish input to EUDISED is prepared by the Library, which collects all Danish reports on educational research and innovation, as well as information on ongoing educational research.

The Library has an entire collection of the ERIC microfiche from Resources in Education, and in cooperation with the central libraries of education in the other Nordic countries, it has carried out an experiment with off-line computerized documentation from ERIC and Psychological Abstracts, the purpose of which was to familiarise researchers working in this field with computerized documentation, as well as to get empirical information about the feasibility of such service in those fields. After finishing the experiment, the National Library of Education has the opportunity to offer an on-line documentation service from ERIC and Psychological Abstracts from the Lockheed bases in California. As we have not yet got a terminal, we have to use the equipment in other libraries. This service is not a daily routine as the readers have to pay the costs, and as we will not advertise the service until we have a terminal ourselves.

To suggest new activities and to make proposals for participating in international educational documentation systems, the Committee of State for Scientific and Technical Information and Documentation /called DANDOK/ has set up a reference group, the committee for educational information and documentation. Until now this committee has acted mostly as a national steering group for the experiment. This committee appoints members to a Nordic committee on educational information and documentation. This committee has been the common steering group for the above experiment. At present, it is preparing suggestions for a common Nordic data base on education.

SITUATION IN PEDAGOGICAL INFORMATION WITHIN THE FRAMEWORK OF THE INFORMATION SYSTEM OF SOCIAL SCIENCES IN THE HUNGARIAN PEOPLE´S REPUBLIC

Ferenc Arató, Director General of the National
Pedagogical Library and Museum, Budapest, Hungary

I reported on the situation in and problems of the Hungarian pedagogical information system at the EDICO Colloquium in Prague in 1974. When drafting the situational report, I compared the prevailing conditions with the decision of the Scientific and Political Committee, set up by the Government of the Hungarian People´s Republic, and I documented it with the respective projects.

In the past two years the professional information systems have been developing according to the needs arising from State, social, political, economic, scientific and cultural tasks. The contemporary information system in Hungary provides materials for political and governmental decision making, depicts the reality, and renders information also for scientific research. The system is divided into the spheres of natural sciences, technology and social sciences. As a result of more demanding tasks, the technical information system and the information system of natural sciences, function both more perfectly, under better conditions, and have acquired richer experience. We have significant contacts with abroad, primarily with the C.M.E.A. member countries.

In fact, it is possible to speak about the unified network of the information system only with one-year retrospection. The Coordinating Council of the Social Science Information Centre was set up and it operates on a systematic basis. By establishing subsystem centres and by determining their tasks and the information network for the individual scientific branches was formed, viz.: 1. economy, 2. political sciences,3.Governmental sciences and law,4.sociology, 5. pedagogy,6.literary science, 7. historical science. The concordance of information activities is very important in our opinion, to avoid unnecessary overlapping by means of coordinated cooperation within the framework of subsystems of individual scientific branches, and to secure perfect information services, so that the participating institutions could fully satisfy the demands of scientific branches. By virtue of the cooperation within the social science information system, and in harmony with the possibilities and needs, we wish to ensure the unification of acquisition, processing and dissemination of information.

The Hungarian information system of social sciences looks for and establishes relations with foreign systems, first of all with the MISON, to make our information services as perfect as possible.

The Hungarian pedagogical information system is an organic part of the social science information system. The work of the information network is carried out primarily, but not exclusively, through its Centre,the State Pedagogical Library and the Museum. The Centre sees to it that the State and regional educational authorities ensure the basic information for pedagogical research, so that they provide creative and active pedagogues with information serving the improvement of the standard of their work. Their task consists in harmonizing the work of institutions /both receiving and providing information/, which participate within the framework of the information network, as well as the division of labour and the creation of various forms of cooperation in acquiring materials and offering services. Because the Centre is not an official authority, coordination is based on an agreement concluded with the cooperating authorities.

In the interest of satisfying the demads, the planned creation and systematic improvement of the network of domestic and foreign information sources - especially books, periodicals, bibliographies, and other documents /statistics, research reports, dissertations, unique documents not for sale/ is considered essential.

Domestic factors and contacts with abroad influence the development of activities of the information network. Greater demands on our information services within the country have been voiced first of all among pedagogical research workers. The Scientific and Political Committee of the Hungarian Government determined the activities of the information system with the simultaneous research co-ordination on the nation-wide level. It specified the research topics being of nation-wide interest, ensured conditions for the research and took care of the information network.

The pedagogical research is also of nation-wide interest. The competent body of the Ministry looks after the research coordination. Institutions and leading workers responsible for the individual research topics, are oblidged to submit projects and reports to the State Programme Office. Research is preferentially incorporated in the pedagogical information system, through the coordinating body.

The researchers' demands constitute a major task for the Centre of Pedagogical Information System /OPKM/. Taking into account the research topics, it was necessary to specify primarily the orders and processing of foreign professional literature and other documents.

The increased requirements are raised first of all on the investigation of literature. In Hungary the pedagogical information is based upon the network of libraries. However, the increased requirements on information services compelled us also to the internal reorganization of the Information Network Centre - OPKM. An individual information department with extended services in the sphere of bibliography was set up. One of the researchers' demands is the elaboration of a bibliography according to the individual subjects, and the dissemination of professional information on its basis. Changes in the quality of professional information services necessitated the perfection of the process of cataloguing. Traditional catalogues were revised and where possible, adjusted according to requirements. Likewise, special information catalogues, differing in many things from the traditional ones were elaborated. Essentially, information sources processed according to topics were arranged in a catalogue system. The same was also done with potential information sources, i.e. those fundamental materials, which in all probability - knowing the perspective plans of research and education - will be in demand, were catalogued.

The systematic activities of the information network, the flow of information will be ensured by the following publications:

- Hungarian Pedagogical Information - it processes and informs on the domestic professional literature,
- Foreign Pedagogical Information - on foreign professional literature, with name and subject registers, in 12 issues annually,
- National Index of Acquisitions of Foreign Pedagogical Books is published twice a year. It is, at the same time, a bibliography of new pedagogical books for all libraries of the country. A national catalogue of new foreign pedagogical books is under preparation.

We have also introduced distinctive methods of information processing. Those are: documentation of subjects from foreign professional literature and comparative pedagogical works. Out of those we have already processed 20 extensive subjects. The most extensive was the nineteenth subject, in the framework of which we elaborated in five volumes, upon more than 1,000 pages, curricula, programmes and time tables in the socialist and capitalist countries with various comparisons. In this manner we wanted to contribute to the just completed reform of the curriculum.

The connections of the Hungarian pedagogical information network with abroad, primarily with the socialist countries have been extended. As it is well known, the Conference of Directors of Information Institutes of the Socialist Countries has been regularly organized for the past three years. It coordinates information services among our countries, it elaborated the plan of subjects proposed for cooperation which has been partly realized. The Information Bulletin constitutes one form of the planned cooperation. Issues published until now indicate that it only informs us mutually, but it also influences positively our research, as it specifies and facilitates mutual information. The exchange of books and other documents, the cooperation in the bibliography of subjects, periodical exchange of information, laws, regulations and fundamental documents are of great significance.

We can note that the cooperation with information systems of the socialist countries proceeds in the correct direction and shows remarkable results already now.

Likewise the role played by UNESCO-BIE is important for the contacts of the Hungarian pedagogical information system with abroad. Various forms of mutual relations are successful. We consider it correct that the BIE prepared a list of information centres of its member countries and circulated it among all its members. In our opinion this project evoked greater interest in information in West European countries, which we have tried to satisfy within our possibilities.

I agree generally with the proposals forwarded by the

EDICO-2 administration. In my opinion, they are in accordance with the spirit of the Final Act of the Helsinki Conference. They correspond with the agreements on information relations concluded between the socialist countries, they will contribute to the establishing of relations between the UNESCO-BIE and the regional organisations of the socialist countries, and also to better planned cooperation.

I would just like to add to these proposals that in the interest of strengthening relations, it would be useful if EDICO participated in the publication of a professional pedagogical seven-language dictionary, which is being prepared in cooperation of the socialist countries. This theasurus will be not only a great help when translating into or from foreign languages, but it will also contribute to removing differences in terminology. Undoubtedly, we all agree that scientific cooperation would be greatly facilitated, in uniform terms and expressions were used in translations. The Multilingual Pedagogical Thesaurus would enable this.

THESAURUS VERSUS CLASSIFICATION IN INTERNATIONAL EXCHANGE OF EDUCATIONAL INFORMATION

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Introduction

In the introduction to the EUDISED Multilingual Thesaurus for information processing in the field of education, it is said that in constructing this thesaurus the principle of multilinguism was recognized from the outset. It continues with the statement that the EUDISED approach to the problem of multilinguism was not the first of its kind in the history of documentary language. To support this statement the introduction refers to the Universal Decimal Classification, UDC, which is published in many different languages.

The author continues stating that the usual procedure in works like the UDC, is to start with a basic vocabulary in one language, which is regarded as satisfactory for the field to be covered, and then try to find corresponding terms in other languages.

The views expressed in the foregoing remarks may lead to misunderstanding of the relation between universal classifications, like the UDC and documentary thesauri. The author of the introduction to the multilingual EUDISED thesaurus wanted to indicate the difference between the translation of an originally monolingual thesaurus and the process of determining equivalence in truly multilingual thesauri.

The use of the UDC as an illustrative example in this context is only partly correct. If one restricts his attention to the text-part of the UDC schedules, one could agree with the author.

However, no justice is then done to the UDC as a whole, because the concepts in the UDC are in the first place represented by notations, usually consisting of a combination of figures and symbols. It is precisely in the notational part of the UDC that its multilingual character is so strongly marked.

One can in fact hardly speak of multilinguism here, because in an artificial language this concept can only be referred to as an analogue. The example of the chemical symbol--language however shows what enormous results can be obtained with such an artificial language.

The lack of understanding of the true character of the UDC seems to be in many cases the explanation of persistently surviving misunderstandings, regarding the use of the UDC in documentary information systems. This is particularly the case when the problem exists whether to use in a system the UDC or a thesaurus. Hereafter an attempt will be made to clarify a few things when using a documentary language.

UDC and Thesaurus, both Documentary Languages

A documentary language can be defined as an artificial language, used by documentation systems for purposes of indexing, storage and retrieval. There can be no doubt about it that both the UDC and the Thesaurus must be defined as documentary languages. The question is, however, whether one can use the UDC as it stands - in its full range of possibilities so as to express technical terms - as a documentation language in the strict sense. The answer to this question is no. Information systems operate with well-defined and unequivocal technical terms or descriptors. The UDC does not provide such ready-made descriptors. It is necessary, for an explanation of this difficulty, to go somewhat deeper into the question: how to use the UDC.

How to Use the UDC

The UDC can be used in a pre-coordinative or a post-coordinative way. How much these both utilisations may differ, there is at least one thing they have in common: the practical application of the "possibilities" of the UDC. The structure of the UDC with its many auxiliary tables and the single main table, with its hierarchy and its property to denote various points of view, offers such an abundant choice of possibilities for combining that every user without any exception will have to determine beforehand what alternatives he is going to use.

A classification can be universal, the application of a classification not. The application is always subject-oriented. In this respect the UDC can be referred to as the "possibility" and preceding the utilisation of the UDC there is always the procedure of authorisation of the technical terms /search indicators and descriptors/ to be used. The result of such an authorisation is normally called a user's code or a special classification, being a classification of a specific subject field or designed for specific purposes.

Thesauri and the UDC

Let us return now to the thesaurus. A common definition defines it as a controlled and dynamic documentary language, containing semantically and generically related terms, which comprehensively covers a specific domain of knowledge. We are now in a position to compare our working definitions of the thesaurus and special classification. The latter being a controlled and dynamic documentary language, containing terms grouped into classes, reflecting the structure of arrangement by notation.

The conclusion after comparing both definitions must be that both cover the same grounds and differ substantially in the methods the descriptors are presented there. In a special UDC classification the descriptors are primarily presented in a systematic, decimal order. In a thesaurus the main presentation is normally in the alphabetic order.

The utilization of a symbol language in the UDC and of words of a natural character in thesauri, so as to denote the technical terms, is of minor importance for the decision to use one or the other tool. This may be particularly obvious if attention is given to the fact that computers operate on impulses, whether these originate from figures, symbols or letters, it is completely irrelevant for the machine.

NATIONAL LIBRARY FOR PSYCHOLOGY AND EDUCATION

Elin Ekman, Head of the Library, Stockholm, Sweden

1. Experiences of using foreign information systems - how to use them in a national system

The libraries and the librarians have acquired during a long time experiences in preparing the material /books and journal articles, as well as research reports/ for the different needs of their users. The libraries used different systems for subject catalogues, national and international, e.g. UDC and Dewey. In Sweden we have a national system of letters, SAB, used in university libraries as well as in public libraries and school libraries.

In view of the increasing flow of information material and the adoption of computerized processes there has been in the last decades more and more interest in the documentation problems, in the handling of the material and different index systems. The problem is to give sufficient information, but not let people get lost in too much information.

A number of abstract journals are published and there is a cooperation of researchers and librarians so as to solve the different problems.

The standardization of the abstract journals /bibliographic references, keywords, abstract information, indexes/ caused that the discussions on indexing and thesaurus problems were more concrete. The data bases for retrieval of literature information brought discussions among documentalists, librarians and researchers, sometimes at a very high level.

In some subjects there are very important abstract journals, used all over the world, but most of them are published in the English language.

In psychology we have the Psychological Abstracts, in education the abstract publications of the American ERIC system, both of them very interesting for this discussion about methodological problems.

In Sweden we have been using these publications for manual information retrieval for a very long time, and we know their structure quite well. There is practical experience in using the keywords.

During the 1970s we have had access to computerized information retrieval at different data bases from the U.S. We had to find a good retrieval system which would enable us to use the same programme for several data bases. The cooperation between libraries and data experts is a must. We had the opportunity to make experiments in the European EUDISED system, handled by the Council of Europe and to evaluate the researchers' experiences of using computerized information in a Scandinavian project for psychology and education /Försök med EDB-basert litteratursøking innen psykologi og pedagogikk, Nordisk utredningsserie, 1976: 29/. My Scandinavian colleagues have already mentioned this project. It was important, because we had the opportunity to evaluate this form of information service: 92,490 of the users answered our questionnaire. Very many asked for information on Scandinavian material. Then we decided to ask for money for a new project, in order to make input in a computerized system containing information on research, publications, reports, as well as journal articles. Now a documentalist in Jyväskylä is testing techniques and selection criteria of Finnish material as a model for future work. There is a steering committee of this project: from each country a librarian and a researcher.

In every single country there is a Committee for Educational Information and Documentation. Members are researchers, librarians, teacher educators and administrators. These national committees elect the members of the steering group for our Scandinavian projects in education. This steering group is also a group of experts in psychology and education which work for the Nordinfo organization.

At the Swedish National Library for Education and Psychology we publish an annual catalobue "Swedish Behavioural Science Research Reports". We have made use of our experiences and found:

- a need for standardization of information,
- a need for standardization of keywords and descriptors,
- a need for different indexes /author, subject, institutions/,
- a need for subject groups,
- a need for selection criteria.

The users of our information are mostly researchers, who know very often the abstract journals through their own experiences in information retrieval.

We have had no possibilities to build a national system, nor to make a national thesaurus for psychology and education.

We have known, that we shall be able in the future to make input in a data system, either national or international.

Consequently, we have decided to make a form for the researchers, adapted to international standards, to elaborate directions for selection criteria and for the writings of abstracts and to use in Sweden well-known thesauri for key-words and descriptors. Now we have some years of experience. There are no special difficulties with the researchers' filling-in of the forms, but there are some with the choice of keywords and descriptors. They use very often too broad terms or too special, sometimes terms of their own. The editing of the publication is then not an easy thing. The editor has to find the proper word, to discuss it with the researchers and documentalists, as well as with his colleagues at the library.

The Swedish abstract publications can be very easily transferred to a computerised system, we can use the same profile, as we are using now for our ERIC retrievals, we have just to add the key-words from the EUDISED system. I think that we have utilised our experiences with using foreign information systems in building our national system. At the moment, we would like very much to computerize the catalogue, but a printed publication is important, too, because very many institutions and libraries have no access to computers and the use of tapes.

2. The exchange of pedagogical information in Sweden and in International cooperation

The need for information at the national level: the first problem is to know what is going on, what is published in the educational field. Aids are the national bibliography of Swedish printed publications, special bibliographies /very flew at the moment/, lists of research reports and of ongoing research projects. Then there is a need for information about what is going on in other countries and about the activities of international organizations.

Who are those who seek information? There are very different groups: administrators, researchers, teachers, students, etc. And you must give them the right information, not too difficult, not too cursory.

We had to analyse different problems, especially according to information on educational research and experiments, with regard to our resources. The granting bodies - the National Board of Education and the Board of the Universities publish annual reports on projects in Swedish and actual leaflets in Swedish and in English. Statens psykologisk-pedagogiska bibliotek /the National Library for Psychology and Education/ publishes an annual catalogue of the most important research reports /in English/.

Swedish libraries have a long experience in cooperation and in the use of interlibrary loans. The National Library for Psychology and Education plays an important role, among other things, in providing information about and from foreign countries.

Information for international purposes is provided by the International Section of the Ministry of Education, by information officers at the Board of Education and the Office of the Chancellor of the universities, as well as by the National Library for Psychology and Education. Very often these institutions cooperate and send the questions to the proper institutions or to national specialists.

CURRENT SITUATION IN BIBLIOGRAPHY AND DOCUMENTATION IN THE AUSTRIAN EDUCATIONAL SYSTEM

G. Silvestri, Head of the Department for Documentation and Libraries of the Ministry of Education and Arts, Vienna, Austria

Literature concerning the system of education is well processed in Austria. "The Austrian Bibliography for the Scientific Field of Educational System" is published regularly since the year 1973, four times a year, in the "Pedagogical Reports", being a separate annex to the official bulletin of the Federal Ministry of Education and Arts, as well as of the Federal Ministry of Sciences and Research. The Bibliography is edited by Dr. Leopoldina Swoboda /Pedagogical Institute of the Vienna University/, in cooperation with Dr. Johannes Stary /Austrian Institute for the Section of Youth/ and Dr. Werner Lenz /Pedagogical Institute of the Vienna University/.

This Bibliography came into existence, upon the initiative of the EUDISED project team, entrusted by the Federal Ministry of Education and Arts and the Federal Ministry of Sciences and Research with the preparatory work in the field of all-European documentation system for the pedagogical sciences. It includes all monographs and pedagogical periodicals in Austria, as well as pedagogical articles from other periodicals. It does not deal with articles that are too short, or that analyse too specialized, detailed issues. The Bibliography consists of two parts, the textual part and the index. The index is divided into the register of authors and headings. Titles themselves fall within general subject groups, and are divided within their framework, according to headings. The heading register is comprehensive, as it introduces all heading and the combinations of headings in reverse sequence. Headings themselves are arranged according to the Thesaurus of Pedagogy, which represents the joint documentation work in the field of pedagogy of the corresponding institutes of the Federal Republic of Germany, Austria and Switzerland. The individual bibliographical data can be, according to the needs, extended and explained from various viewpoints by means of abstracts. The registers are accumulated annually. Titles are processed by means of a computer and they can be included, at the same time, into the Pedagogical Bibliography.

The Austrian literature is further developed in the above-mentioned Pedagogical Bibliography, in which the Austrian part is processed by the workers of the Pedagogical Institute of the Vienna University, entrusted with this task by the Federal Ministry of Education and Arts. The Pedagogical Bibliography, a bimonthly, published its May/June 1975 issue, Volume 10. Also the bibliography which processes the documentation field of pedagogy /DOPAED/ is published bimonthly, in cooperation with 8 West German and Austrian Institutes. At present, the Pedagogical Bibliography is in the state of planned reconstruction, consisting in an experiment aimed at improving topicality by internal structural changes, by shortening the time periods between the forwarded literature and the publishing of the Bibliography. Furthermore there is independent literature concerning the educational system in the Austrian Bibliography, a fortnightly published regularly since 1946.

The Austrian Bibliography is divided into 25 subject groups, the 10th group covering the field of education and instruction, and the 11th group the field of textbooks.

The Austrian Bibliography is very topical, and it is really up to time, what is evidenced by monographs appearing in Austria on the book market, as well as outside it. It covers all the fundamental individual works. On top of that the Austrian Bibliography is at the disposal in summary quarterly registers, accumulated later on into annual registers.

The Bibliography of Adult Education has been issued since the year 1976, as a supplement. It is published monthly, including the following bibliographical data:

The Bibliography of Adult Education: owner, editor, publisher: Federal Ministry of Education and Arts: Department of Adult Education, Vienna 1014, Wallnerstrasse 8. Responsible for contents and printing: Dr. Leopoldine Swoboda, Pedagogical Institute of the Vienna University, Garnisonsgasse 3/8, 1090 Vienna.

The Bibliography has a limited time space: only two months of time are available for the publishing since the acquisition of the reports. It is very topical, and cooperating with 6 Astrian and one West German institute, it is constantly supplied with titles, which are then computer-processed and classified into categories. Thus they are compatible with the Austrian Bibliography for the Scientific Field of Educational System. All the monthly published issues are supplemented by two new headings in the register, and by one author register, and moreover they are machine-cumulated into the register every year. Comprehensive annotations are attached to the majority of complemented, dependent and independent literary documents.

In Austria is the supplementary Documentation on Educational Research I, for the special sphere, which was processed by Heinrich Peter Adamec; editor: Federal Ministry of Education and Arts with the Federal Ministry of Sciences and Research; publisher Institute of Research and Development of Education, Vienna, December 1972; and the Documentation on the Educational Research II, processed by Heinrich Peter Adamec; editor: Federal Ministry of Education and Arts with the Federal Ministry of Sciences and Research; publisher: Institute of Research and Development of Education, Vienna, February 1975.

This Documentation covers the 1972-1973 period, until March 15, 1974, is conceived as a publication of loose pages, and registered in accordance with the scheme of the corresponding committee of the CCC of the Council of Europe in Strasbourg - according to common research projects in the field of the Austrian educational system. The first part of the research appeared in 1973 in the English translation: Educational Research in Austria 1971-1972, Contribution to the 3rd Survey of the State of Educational Research in the Member Countries of the Council of Europe. Translation and revision of the austrian Bildungsforschungsdokumentation by: Dr. Herbert Schwanda and Karin Steinhaus, M. A. Published by the Division of International Cooperation in Educational Planning and Research within the Federal Ministry of Education and Arts, and the Federal Ministry of Sciences and Research, Vienna, 1973.

As the original publication form on loose pages did not prove quite satisfactory, upon the reccomendation of the Council of Europe, a monograph under the title "The Federal Ministry of Education and Arts - Educational Research in Austria 1975-1976", Vienna, 1977 was published.

This documentation ties in on both previous documentations concerning educational research, from the viewpoint of reporting and time, and it replaces also the volumes of the Educational Research in Austria, published on the basis of an agreement with the Council of Europe, and which continue to be published, in spite of the fact that the English translation was cancelled. The agreement was possible, because the efforts aimed at the exchange of information in the field of the educational research at the European level, rely on computers now. The European Documentation and Information Systems of Education /EUDISED/. Within its framework, the R and D Bulletin, currently covering and documenting the selection of projects in educational research of the member countries of the CCC of the Council of Europe, is regularly published. Because the multilingual thesaurus is being used in the development of projects, the documentation is accessible also to users, who do not speak German.

In conclusion, reference should be made to the special bibliography within the framwork of the educational system, to the overall list of programme and occasional literature of Austrian schools compiled by Prof. Dr. Wilhelm Krause. The following volumes have been published until now:

- Volume I, 1945-1955, Vienna, Austrian Federal Publishing House, 1956;
- Volume II, 1955/56-1962/63, Vienna, Austrian Federal Publishing House, 1964;
- Volume III, 1963/64-1969/70, with a survey on publications 1970/71-1972/73, Vienna, Holtzhausen, 1974.

In this documentation the contents of the annual reports and occasional literature of Austrian schools are divided according to localities of schools and they constitute a lively contribution to the history of Austrian education.

Moreover, two library acquisitions - supplementary lists of books of concurrent libraries should be mentioned.

1. The Federal Ministry of Education and Arts, the Federal Ministry of Sciences and Research, Library, The List of Library Acquisitions, 31st volume, 1977. This monthly, divided according to the example of the Austrian Bibliography, but in the framework of subject groups of the subdivided supplementary list, contains the following division:

10 - Education and Instruction in Subgroups
    a/ Education and instruction /in general/
    b/ School Reform
    c/ School as a whole /in general/
    d/ Programmed Instruction
    e/ Audio-Visual Instruction
    f/ Adult Education
    g/ Plan of Education
    h/ Educational Research;

11 - Textbooks from Abroad

Received by interested parties - domestic and foreign users having at their disposal the acquisitions of this large special library /the annual number of acquisitions reaching presently 8,000 volumes/.

Similar objectives are pursued by:

2. The List of Acquisitions of the Pedagogical Institute of the Vienna University, Volume No. 2, 1977. It is published quarterly and is divided according to the system of the Austrian Bibliography for the Scientific Field of Educational System.

EDUCATIONAL INFORMATION PROBLEMS AT THE NATIONAL AND INTERNATIONAL LEVELS

Michael Mataia, Inspector for Secondary Schools, Ministry of Education, Nicosia, Cyprus

Introduction

First of all, I want to join the previous speakers in thanking the local authorities for the organization of this meeting as well as for their very kind hospitality. Our thanks extend also to the eminent UNESCO-BIE officials whose contribution at all stages of the organization of the Colloquium is definitely invaluable.

Meetings and contacts such as this one help our mutual understanding of current situation and problems existing in our different countries on the topic of exchange of educational information. As Shakespeare says in the Merchant of Venice "is advice blessed because it blesses king who gives and him who receives", in other words this exchange of knowledge and educational experience, as it is evident, that we, small countries, benefit to a greater extent, than large, highly developed countries do. That is why we are all the more thankful. And if this is so with small countries in general, it is more particularly so with a very small country as Cyprus is.

Besides our "geographical" demographic smallness, our overall situation is aggravated when we consider the matter in terms of money. As Mr. Fernig, Director of UNESCO-BIE said in his speech, the economic aspect is important. Organization, manpower and woman power are expensive and Cyprus, after the tragic and catastrophic events /I mean the Turkish invasion/ of July, 1974, is not really for the time being in a position to meet the costs of a well-organized, I would say scientifically organized educational information and documentation system which could collect, classify and disseminate educational information at the national and international levels, in a most systematic and efficient way. Nevertheless, as UNESCO may know officially, progress is definitely slowly and surely being made.

After this long introduction I come to the comparatively short main body of my speech which is in fact based on a recent report prepared by our Institute of Education - or as we call it - the Pedagogical Institute.

Survey of current situation existing in Cyprus

A. Preliminary information

The Cyprus educational system is a centralized one and it provides primary and secondary education for all segments of the Cypriot population. It also provides higher education in certain fields, such as Elementary Teachers' Training, Forestry, Nursing and Technology. Real efforts are being made by officials and educators for the improvement of educational practice and techniques, and for the development of the educational system in general. It is therefore understood that the educational information has to play a major role in this improvement. What follows is a brief account of what exists on the island as regards generating and disseminating educational information.

The decisive role played by the flow of information in the improvement of educational systems has always been recognized in Cyprus by the government officials at the Ministry of Education and by the educators. This recognition has found its expression in the efforts of ministerial officials, individual educators, institutions and professional organisations. However, recently a more systematic and purposeful attention is paid to the flow of educational information through the establishment of the Cyprus Pedagogical Institute, to which this responsibility has been assigned by the Ministry of Education.

B. The Pedagogical Institute as an information centre

The Cyprus Pedagogical Institute started with its functionary operation in 1973. The main objective of the Institute is to provide opportunities for the development of teachers and administrators from all levels of the educational system in Cyprus. To put it in a different way - it tries to orientate teachers and administrators towards new trends in education and help them introduce changes in their everyday techniques and procedures. One of the main functions of the Institute is to provide for the flow of educational information among teachers and educational administrators. This flow of information takes place both directly and indirectly.

Direct flow of educational information takes place as a result of the documentation and dissemination of educational information activities. These activities include:

a/ abstracting of a number of educational bulletins and books, and b/ making regular publications.

Indirect flow of educational information takes place as a result of:

a/ in-service training courses, seminars and workshops for teachers and administrators both of the primary and secondary levels of the educational system;

b/ the production of audio-visual aids and teaching materials in general;

c/ the organization of research projects on the structure of the educational system and on the contents and methods of instruction.

The Pedagogical Institute's programme on educational information is nationally and, at the same time, internationally focused. Real efforts are being made to adjust policies and programmes to the socio-economic conditions that prevail in the island. So the need arises to get, generate and disseminate the necessary feedback to all groups interested. This, in addition to the centralized character of the educational system, makes it imperative for the Institute to elaborate a national basis for the flow of educational information.

At the same time, Cyprus feels as a member of the world community and is interested in educational developments which take place elsewhere. Thus it is the policy of the Institute and, consequently of the Cyprus educational authorities to utilize the results of recent educational developments elsewhere, while transmitting educational experience to other interested countries.

One of the projects the Institute inaugurated in the field of the flow of educational information was the preparation of central catalogues for the libraries that exist in the island. The intention was for Cyprus to be connected with other information centres that exist abroad and, at the same time, help research workers in the island. However, the project had to be postponed as a result of the Turkish invasion. Meanwhile, the Institute:

a/ devised procedures for abstracting a number of educational bulletins;

b/ plans regular publications /twice a year/ for the dissemination of the information abstracted.

C. Flow of educational information through other institutions, individuals and professional organizations

In addition to what has been mentioned, there exist in Cyprus some other mechanisms and procedures through which the flow of information takes place. These procedures provide for the dissemination of information both vertically and horizontally and can be divided into efforts on behalf of:

a/ the Ministry of Education;

b/ institutions, individuals and professional organizations.

a/ Efforts on behalf of the Ministry

These efforts take place both in written and oral form.

I. Written form

1. Data on schools, pupil population, personnel, educational budget, etc., published annually by the Statistical Service

at the Ministry of Education.

2. Publications on a permanent basis:

2.1 "Education in Cyprus". Published twice a year. It includes articles on the structure of the Cyprus educational system and on the contents and methods of instruction /the publication of this bulletin has been undertaken by the Cyprus Pedagogical Institute since last year/.

2.2 "Educational Bulletin". Published every two months. It includes reports on projects carried out in Cyprus and reports by officials who have attended conferences on educational issues abroad. /Also undertaken by the Pedagogical Institute since last year./

II. Oral form

The flow of educational ideas occurs through the personal contact of primary- and secondary-school inspectors while supervising schools and teaching personnel, through discussions and lectures organized by a number of educational and professional organisations, and through the educational broadcasting and television.

b/ Efforts on behalf of institutions, professional organisations and individuals

The majority of the educational institutions secures flow of information among interested groups /e.g. teachers, parents, students/ through regular and/or special publications. These publications contain information on:

I. contents and approaches of instruction;

II. various activities which form a part of the school programme, and

III. brief accounts of the results of research and curriculum projects undertaken either in Cyprus or elsewhere.

Such publications worth to be mentioned are the following ones:

1. "Bulletin for Educational Awareness". Published every two months by the Cyprus Pedagogical Academy.
2. "The Educator". Published by the Primary Teachers' Organization.
3. "Secondary Teachers' Bulletin".
4. PTA Bulletins, published by different schools and/or educational areas.

The flow of educational information occurs also through the publications of professional organizations. Two such publications are the following ones:

1. "The Cyprus Pedagogical Research Association Bulletin". Published twice a year. It includes reports on research projects in Cyprus undertaken by members of the Association.
2. "Family and School". Addressed mainly to parents. It includes information on the problems of child care and is published cooperatively by the Ministry of Education and Teachers' and Parents' Associations.

Finally, we have to mention the flow of educational information that takes place through the publications made by individuals on educational issues.

Conclusion

In conclusion, I must say that it is evident that a lot remains to be done in Cyprus, but in the framework of the continuous efforts made at this very moment by the Ministry of Education, aiming at the extension, acceleration and intensification of the democratization of our educational system, the perspectives for a well-functioning system or systems of educational information are good. Because it is true that a well-organized, well-developed and well-functioning educational system is greatly helped by a well-organized, well-developed and well-functioning system or systems of educational information.

And now, before closing my speech, I must say that in my opinion, the language barriers, already mentioned by Mr. Fernig, constitute the biggest challenge for the UNESCO officials and national organizations in charge of the development of the exchange of educational information, especially at the international level.

Through the extension, modernization and intensification of foreign language teaching of at least two out of the three UNESCO languages in all classes of secondary schools, human contacts and collaboration, not only in the field of exchange of educational information, but also in all spheres of human activity will be greatly helped, and the objectives set will be realized. And these objectives evidently include the Final Act of the Helsinki Conference on Security and Cooperation in Europe, as well as in other countries of the world.

So if the participants of EDICO-2 agree I propose that my final suggestion on extended and intensified foreign language teaching would be added explicitly to the suggestions and recommendations formulated in the document entitled "Scheme" which has been handed to us.

On page 4 of this document, the 8th line from the bottom of the page, to the 5th draft recommendation can be added:

- to extend and intesify the teaching of at least two of the three UNESCO languages in all secondary school grades.

The same way we could modify on page 6 the draft recommendation number 8 as follows:

- for the gradual abolition of language barriers to extend, intensify and modernise the teaching of two out of the three UNESCO languages in all secondary school grades.

SITUATION CONCERNING INFORMATION ON THE EDUCATIONAL SYSTEM IN THE FEDERAL REPUBLIC OF GERMANY

Horst Rocho, Head of the Documentation Department of the Secretariat of Permanent Conference of Ministers of Education and Culture of the G.F.R.

I. Summary

Information on the educational system in the Federal Republic of Germany is generated and disseminated by most diverse groups of people, from most different grounds, instigations and motivations. Let us mention at least the numerous unions of teachers and university professors, the parent-teacher associations, as well as professional unions /for instance the Union of Special Schools, the unions of geographers, historians, natural scientists, technicians, and others/, and last but not least also the trade unions, and finally the political parties, too. Each of these groups participates in various public discussions on problems of the educational system, and it collects and disseminates the information on the system of education from its individual viewpoint. The result of these activities is a multitude of documentary work, collections,but also professional pedagogical periodicals. More than 300 professional pedagogical periodicals appear in the Federal Republic of Germany, reflecting the exceptionally differentiated reality of the educational system, with its local as well as wider, supreregional problems.

2. Task of the Government

The Federal Government, as well as the Governments of the individual States, belongs to the complex of bodies collecting and disseminating information. The development of the national management system dealing with appropriate dissemination of information at various levels has got rather a supplementary function in the present situation in the Federal Republic of Germany, and to a certain extent also systematising and rationalising function, which, however, cannot impose limitations on the plurality of aspects and perspectives. However, this applies particularly to the federative state system, such as that in the Federal Republic of Germany.

2.1 State Goverments

According to the Constitution the States of the Federal Republic of Germany are responsible - with the exception of some sectors for the legislation and administrative management of the educational system. Thus every single state of the Federal Republic of Germany has pursued its own information policy. Its objective is to inform the inhabitants on the possibilities of education, od the exchange of information among the administrative bodies, the school and science, and among all those who participate somehow in the educational system, as well as to provide data and information from other States of the Federal Republic of Germany, and from the international sources.

This information policy manifests itself in the publication of official documents and collections of laws, in regular press releases of cultural and educational authorities, in the regularly published information bulletins for the teachers, pupils and parents, in the collections, investigating various branches and spheres of the educational system, questions of reforms, developments, and the results of scientific research.

At the same time, the information policy fulfils first of all the mission of a counselling service. The counselling services for the pupils and parents, with a view to utilizing optimally the possibilities offered by the educational system, but also such counselling services, enabling all the people engaged in the educational system to realize the necessity to acquire knowhow imperative for the performance of their functions within the educational process.

The institutes set up by the Ministries of Education and Culture of the individual States participate, along with the publishing activities, also in the above-mentioned informational activities. These are partly planning and research institutes, but partly also facilities for in-service teachers' training, and the territorial pedagogical centres. Also the Secretariat of the Permanent Conference of the Ministry of Education and Culture of the Federal Republic of Germany - the institution in which I work - develops intensive documentation activities.

And finally, we should not fail to mention the school itself which, as a state establishment, disseminates information concerning the educational system.

2.2 The Federal Government

Along with its overall responsibilities for higher education, the Federal Government has focussed its efforts primarily upon vocational training /vocational guidance/. Being conscious of this task, the Federal Government has pursued a comprehensive information policy. For example, a vast vocational-guidance system was created by the Federal Labour Authority. An agreement between the individual State Ministries of Education and Culture, and the Federal Labour Authority has secured the cooperation between the counselling service and the school. The Federal institutes engaged in the research of manpower, vocations, and vocational guidance, produce and distribute a great volume of information for the purposes of the sphere of vocational guidance.

The Federal Ministries of Education and Science have allocated funds for the research of education, the publishing of its results, and comparative studies assessing the domestic and foreign educational systems. Together with the individual States the above Ministries finance model experiments in all spheres of the educational system as well as the publication of the results of such model experiments.

Within the framework of cooperation the Federal Republic and the individual States publish jointly the Information Bulletin for Secondary-School Graduates. It is published annually and informs the graduates of the vocational, technical and general secondary schools on the possibilities of further education at the universities and institutions of higher education, or on individual vocations. The graduates receive the Information Bulletin free of charge.

The Federal Government has also approved the programme promoting information and documentation. Its objective is the development of an extensive system of information and documentation in the Federal Republic of Germany. The programme anticipates the creation of the professional information system "Education",as well as of institutional facilities, interconnecting all the information systems.

3. Modern Technologies

Computers are being used for the documentation of the educational system at various places in the Federal Republic of Germany: in the sphere of the school and university administration, when processing the pupils' and the students' card catalogues in the Federal Labour Authority, when preparing information for the counselling service, as well as for the educational research, and in some institutes when preparing indexes, and bibliographies. When planning new documentation facilities, the utilization of computers is envisaged, as a rule.

The computers are used in the sphere of statistical educational information, within the framework of the Statistical Data Bank, attached to the Federal Statistical Bureau and to the Federal Institute for the Research of Vocational Education. But of course, the educational information is included also in the lists of tasks of the mass communication media as, for instance, radio and television. A number of programmes and broadcasts serve this purpose. The competent editors prepare information on their own, thus constituting another information element, along with the already above-mentioned educational information, and its publishers.

INFORMATION SYSTEMS SERVING THE EDUCATION IN THE POLISH PEOPLE'S REPUBLIC AND CONDITIONS OF INTERNATIONAL COOPERATION IN THE FIELD OF PEDAGOGICAL INFORMATION

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Introduction

Two tendencies have become evident in the field of scientific information in recent years:

- creation of optimum information systems in the framework of the individual countries. As an example of such a tendency we could mention the NATIS conception /Paris, 1974/;
- organization of international cooperation in the sphere of individual scientific systems. The substantial feature of the above-mentioned trend is the EDICO-2 in Bratislava, which took place three years after the first meeting of experts in the field of pedagogical information /Prague, 1974/.

SINTO

At present, the National System of Scientific, Technical and Managerial Information - SINTO - has been launched in Poland. That is a complex of means, methods and organizational principles, formed to enable the mediation of scientific, technical and managerial information to various groups of users.

The SINTO deals with that part of information generated in the process of scientific research, as well as social activities. This information should serve the development of science, technical and economic process, as well as to perfection of didactical and enlightenment activities, and the improvement of the organizational and management system.

The objective of the SINTO consists in improving and increasing the efficiency of the entire process of exchange of scientific ideas between the creators and users, between science and industry, science and management, as well as within the industrial process.

The basic principle of the SINTO activities is to create and improve conditions in which every user will be able to acquire all information necessary for his activity.

In connection with the needs of users various kinds of informational services[1/] will be formed.

When organizing the technological process of information[2/], the division into work of various kinds, carried out and verified from the central viewpoint, as well as activities implemented with the help of information units, are regarded to be most significant within the SINTO system.

[1/] Complete and quick advance bibliographical and library information, covering the essential volume of world information, access to all documents, selected analytical information providing survey on analytical and synthetic and factographic development.

[2/] Overall extent of activities performed in connection with the information transfer from the source to the user, while forms and information methods are taken into account as results of various needs of the users.

The work connected with the information process is divided as follows:

- specific subsystems dependent on the type of documents or questions concerning nation-wide economy, i.e.: scientific and research deliberations, standards, patents, translations, etc.;
- regional and branch subsystems, created for certain branches of the national economy or for non-industrial branches;
- territorial, inter-branch centres, processing information for district needs and using other systems.

From the organizational point of view, the SINTO is a hierarchical network of interconnected and centrally managed informational facilities /information centres, libraries, archives/, which are subordinated to ministries and central institutions.

The Ministry for Universities and Technical Colleges performs general supervision of the develop of informational activities in Poland. In accordance with the Decree No. 35 of the Council of Ministers of the Polish People's Republic, of 1971, the ministries and central institutions are responsible for the state and planning of the development of the information in scientific activities. The launching of the SINTO system changes the existing organizational structure of the information activity. It is concentrated upon its arrangement in harmony with the inevitability to introduce modern techniques of the information process. The Polish conception and realization programme of the SINTO system as the governmental system of scientific information corresponds with the tendencies coming to the fore in UNISIST and NATIS. The SINTO creates a much broader basis than that indicated by the UNISIST directives; it is one of the examples of the NATIS conception.

The system of pedagogical information belongs to the regional systems - in accordance with the conception of the SINTO. Plans of the SINTO anticipate that the information system for social sciences will be formed until by 1980, including the unified information system of pedagogy and education.

Pedagogical Information

The year 1977 is regarded in Poland as the year preceding the general introduction of the ten-year school.

Under these conditions scientific and research activities of institutes, engaged in educational questions in Poland, concentrate their attention upon the realization of the cardinal task, i.e. upon the modernization of the educational system under the conditions of an advanced socialist State.

Further modernization of the information system, development and intensification of international scientific cooperation, participation of specialists and experts in solving the selected research projects as well as the organization of scientific conventions[3/], belong to the significant tasks.

The Ministry of Education and Instruction has the ZVIKAN information system - general register of teaching personnel, which is annually complemented with new information.

The question of organising the data bank for the system of managing the work in education has been given preferential treatment. A special role is to be played by the automated system of pedagogical information.

While creating such a system, it is inevitable to unify the pedagogical terminology, to elaborate the pedagogical dictionary, and then the thesaurus, to unify document entries.

That is the work envisaged for the nearest future. It will be realised with the assistance of the socialist countries and the International Information Centre in Moscow.

In recent years, the situation in the sphere of pedagogical information has slightly improved in connection with the development of the scientific basis in the field of education and instruction, by means of five research centres, established in the autumn of 1972.

These centres have to provide primarily quick and generally accessible information on new scientific pieces of

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[3/] The annual Meeting of Directors of Central Pedagogical Institutes from the Socialist Countries, the Pedagogical Council, was held in Poland in 1977 and dealt with the subject: Task of the Teacher in Shaping Personality of the Young Generation in an Advanced Socialist State. The International Pedagogical Congress is planned to be held in Warsaw in the last quarter of the year.

knowledge in individual branches - scientific subdisciplines, which are included within the framework of the stipulated activities of the following institutes:

- Institute for In-Service Teachers' Education,
- Institute for Vocational Education,
- Youth Research Institute,
- Pedagogical Research Institute/formerly the Institute of Pedagogy, at present the coordinator of research concerning principal questions, carried out by the Polish departments/.

In the scientific and research institutes of the Ministry of Education and Instruction of the Polish People's Republic operate departments of scientific information producing pedagogical information in close connection with general tasks of the above-mentioned institutes.

Such a tight liaison enables to the individual groups to elaborate in detail the partial programme of pedagogical information.

This kind of work forms a comprehensive system of pedagogical information. Special departments of scientific information form a functionally integrated network.

The work of two departments will be improved in the future, of the Pedagogical Research Institute and the Institute for the In-Service Teachers' Education.

The Department of Scientific Information at the Pedagogical Research Institute, which exists since the year of 1950, is a unit of bibliographical and library information in the field of pedagogy, education and sciences, assisting the development of pedagogy.

This Department coordinates, at the same time, the informational activities of other information departments of scientific and research institutes in the field of education and instruction, while maintaining cooperation with abroad.

The role of the coordinator, concerning the information matters in the field of pedagogy is fulfilled by the Department of Pedagogical Information in the field of education and instruction.

Further important link in pedagogy is the sector of scientific information and publishing houses at the Institute for In-Service Teachers' Education, with a network of nineteen regional departments - the Institutes for In-Service Teachers' Education and Educational Research /IKKIBO/.

Pedagogical Information in the System of Postgraduate Studies and the In-Service Teachers' Training

The Institute for the In-Service Teachers' Education is the only one, which is until now engaged in the didactic training of teachers of various specializations, within the framework of postgraduate studies and in-service education. These activities are developed simultaneously with scientifico-didactic work devoted to pedagogical personnel. The Institute is the organizer of constant forms of educationists' further education.

In connection with the character of work of the Institute, the Department of Scientific and Technical Information carries out its activities in two directions:

- it elaborates bibliographical surveys on written pedagogical materials in branches, connected with the educational practice;
- it implements the didactic training of teachers concerning the subjects of scientific information.

The Institute carries out these forms of its activities with the help of teachers, who disseminate their knowledge acquired within the field of scientific information.

"The Analytical Bibliography of the Polish Pedeutological Papers" is an important product of the Department's activity. The above work is earmarked to research workers in the teaching profession. It gathers documentation from the whole country dealing with the subject of "teacher", since the year 1973 until now.

The many-sidedness of the pedeutological pedagogy requires the study of all documents, because it is connected with the research work of representatives of various scientific branches.

Pedeutology as a pedagogical subscience collects comprehensively facts concerning teachers of all kinds of schools. The Analytical Bibliography of the Polish Pedeutological Papers, published since the year 1976, is the first publication of this kind in Poland. Its systematic publishing in the form of perforated leaves is anticipated, so that individual loose leaves could be inserted in the catalogues of pedagogical libraries.

The following two publications are elaborated with a view to the teacher: The Analytical Bibliography of General and Detailed Teaching Theory, and The Analytical Bibliography of General and Detailed Educational Theory.

Both publications include Universal Decimal Classification /UDC/ symbols, keyterms, bibliographical descriptions, according to the valid standard, as well as the analysis describing and specifying the given position. They are also published in the form of perforated loose leaves.

I will mention briefly some other activities of the sector. The main form of the in-service teachers' training are the subject-oriented methodical, postgraduate, professional, and qualification exercises.

The programme of subject-oriented methodical exercises includes also questions of scientific information and librarianship.

The above-mentioned programme will embrace ten thousand people, starting in September of this year. Every year it is precisely this number of teachers of various subject specialisation and qualification, which participate in these exercises. It is necessary to add that every teacher has to attend such annual exercises at least twice. Naturally, the programme for teachers instructing the mother tongue is twice as extensive as that of other subjects.

Educational activities of the Institute for In-Service Teachers' Education are controlled by the CINTE /the Centre of Scientific, Technical and Economic Information/. The task of this institution resides in planning the programming and supervision of the system of scientific, technical and economic information on the State-wide scale.

Information centres as regional pedagogical libraries are of considerable importance in the field of pedagogical information in Poland.

Questions of International Cooperation

International cooperation is one of major factors in the establishment of the SINTO system in Poland. In accordance with Decree No. 35, of the Council of Ministers of the Polish People's Republic, the CINTE is the coordinator of this cooperation. Nevertheless, the realization of this task depends upon all links of the Polish information network, responsible for every single task within the framework of this cooperation.

The cooperation in the field of information exchange with other countries is the crucial part of the programme of scientific and cultural cooperation, on the basis of bilateral and multilateral agreements. These contacts are necessary with a view to ensuring fully the needs of users since no country in the world, let alone a medium-size country, as Poland, can collect all published documents. The analysis of the emerging information is time-consuming, even within the range of publishing houses of one country.

The costs connected with the elaboration of bibliographical materials are much lower in the framework of international cooperation, which is demonstrated e.g. by the publishing of the Pedagogy and People's Education in the Socialist Countries information bulletin /1974/.

The exchange of primary documentation constitutes also an important source of gathering library information in the form of barter. The above approach accelerates informational exchange comprising that part of the publishing activities, not subject to the library exchange.

There are many systems of pedagogical information throughout the world, having various extent, as for instance BIE, UNESCO, EUDISED of the C.M.E.A. member countries, BRADISED in Brazil as well as subsystems of pedagogical information of the socialist countries. Their cooperation should develop on the basis of equality and mutual advantage.

The SINTO system in Poland is regarded to be an active member of the international system of exchange of scientific information - UNISIST.

The systems of the individual countries can be connected in regional systems. In the UNISIST terminology, the International Information Centre in Moscow /MCI/ associating C.M.E.A. member countries: Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Rumania, and the U.S.S.R. is considered to be a regional system. Thus the SINTO will cooperate first of all as a system, connected with the MCINT, and with its subsystem MISON /the International Information Social Science System/.

The principles of the organization were specified at two regular sessions of representatives of central pedagogical information authorities of the C.M.E.A. member countries, in Potsdam /1974/ and in Budapest /1975/. The regular third conference of leading officials working in the sphere of pedagogical information from the socialist countries will be in Warsaw, in March 1978.

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These relations concerning the exchange of information with other countries will be maintained parallelly with the connections with SINTO and other information systems abroad, while their structure will correspond to the general principles of the UNISIST.

The representative of the Preparatory Committee, Borison Brain noted: "We have set the task to form a network capable of development, relying upon the efforts of the existing, as well as future services in the field of information with the objective to extend our cooperation" /Information of UNESCO, 1972/.

QUESTIONS OF CREATION OF THE INFORMATION SYSTEM IN THE FIELD OF EDUCATION IN THE UKRAINIAN SOVIET SOCIALIST REPUBLIC

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Allow me to start my speech with a greeting to all delegates. I salute the delegates of all countries, participating in EDICO-2, on behalf of workers of the Ministry of Education of the Ukrainian Soviet Socialist Republic, as well as workers of information services and of the automated management system of education of the Ukrainian S.S.R.

The information system of scientific and pedagogical information of the Ukrainian S.S.R. is a component of the unified sector information system of the Ministry of Education of the Ukrainian S.S.R., the structure of which has been clarified in detail by the representative of the Union of Soviet Socialist Republics in his speech. This is why in my speech I will mention only those questions which have not yet been mentioned, namely the creation of the information system within the educational system of the Ukrainian S.S.R. At the same time I will lay stress upon the managerial information in the educational process.

Information used in the field of education is conventionally divided in dependence upon the sphere of its utilization into scientific and managerial information. The managerial information is further subdivided according to the functional character into: planning, registration, statistical, dispositional, and directive information.

The field of information utilization for the needs of management includes regional links, and objects of management /schools, district, region/, subordinated to the individual managerial authorities /to the Ministry/.

The field of utilization of scientific and educational information concerns all the organizations and institutions, participating in the elaboration /the Academy of the Pedagogical Sciences of the Union of Soviet Socialist Republics, various scientific and research institutes, pedagogical faculties, and in the utilization/pedagogical faculties, secondary pedagogical schools, schools/ of results of scientific and pedagogical activities /textbooks and teaching aids, didactic and methodical materials, scientific articles, dissertation theses, etc./.

The basic problems connected with the utilization of information consist in:

- classification,
- collection and communication of information,
- analysis, arrangement, packing and preservation of information,
- ensuring the retrieval and selection of information in accordance with the required information,
- providing information to the users in the most suitable forms.

These problems are characteristic of the scientific and technical information, just the same as of managerial information.

within the plan of improving services of scientific and pedagogical information it is possible to select the following problems:

1. further elaboration of the theory and methodology of the information activities in pedagogy;
2. elaboration of new methods, means and principles of information services for the scientists and experts in the field of education;
3. perfection of the system of providing information for the pedagogical sciences that is being realized in the following fundamental directions:
   - research of sources of the scientific and pedagogical information, its systematization and classification,
   - research of subjects of the information acquisition, and their information needs,
   - registration and regulation of relations among the subjects of the information acquisition,
   - examination of the process of the scientific research as such, and the dependence of the information requirements of the researchers upon the stage of the research itself, and upon the character of the research activities,
   - elaboration of questions of the theory and practice of the organization of information acquisition in the scientific pedagogical research,
   - organization of information acquisition for the process of managing scientific research,

- elaboration of questions of the application and introduction of results of scientific activities into practice, etc.

The pedagogical and psychological research institutes of the Ukrainian S.S.R., pedagogical faculties, secondary pedagogical schools, secondary general schools, and other organizations and institutions of the Ministry of Education of the Ukrainian S.S.R. are connected within the network of scientific and pedagogical information. The organizations and institutions of the Ministry of Education of the Ukrainian S.S.R. are connected within the network of scientific and pedagogical information of the Ministry of Education of the Union of Soviet Socialist Republics and the Academy of Pedagogical Sciences of the U.S.S.R., and they maintain close connections also with the informational services of the Ministry of University Education and Secondary Vocational Education of the Ukrainian S.S.R. and the State Committee for Vocational Training Centres at the Council of Ministers of the Ukrainian S.S.R. As far as the information for the needs of management is concerned, the basic problems connected with its effective utilization, consist in:

- arrangement of the corresponding movement of documents,
- automation, on the basis of the application of computers and data transmission devices, processes of gathering, supervising, and processing information on the activities of of educational institutions,
- organization of continuous operative contacts between the managerial machinery of the Ministry of Education of the Ukrainian S.S.R. and educational organs,

- organization of centralized computerized data bank /CDB/ and the creation of the information system,
- utilization of economic and mathematical methods and models for the solution of tasks concerning short-term, medium-term and long-term planning of needs, and utilization of material, manpower and financial resources,
- prognostication in the field of education, with the help of computers.

All the components, connected with the utilization of information, have been studied systematically in the recent period, and associated in one term - "Information System" /IS/.

The IS consists of the following components:

- information sources,
- rules and organization of information and methods of transfer,
- organization and cooperation,
- channels and equipment for the data transfer,
- computers and terminals.

The information exchange within the system of the Ministry of Education of the Ukrainian S.S.R. is determined to a considerable degree, by the organizational and functional structure of the management system of education in the Republic.

The organizational structure of the management system of education in the Ukrainian S.S.R. is characterized by its many links, mass character, and dispersion of management objects, their qualitative and quantitative diversity.

The presence of all functions of management is characteristic for the functional structure of the management system, as well as for other branches of the national economy: registration, planning and regulation /operative management/. A great number of institutions within the field of education are managed according to the departmental and territorial principles. Tasks concerning the analysis of planning and statistical information prevail at the higher level of management /Republican/, tasks concerning the processing of reports and statistical information prevail at the lower level /regional and district/.

The hierarchical principle of its construction is typical for the structure of managing of education in the Ukrainian S.S.R. At the same time, management objects are distributed in space, the change of information is realized in certain stages, but the processes of preparation, collection, transfer, and processing of information, the elaboration of managerial effects, and their notification to the objects of management are distributed in time. Ever larger volumes of information which have to be arranged, processed, analysed, and stored are concentiated annually at all levels of management.

In consequence of the constant growth of volume of the processed information in the field of euucation in the Ukrainian S.S.R., caused by the forthcoming completion of the process of providing secondary general education to all the inhabitants, by the growth of efficiency and quality of the process of instruction, by the intensification of the research in the field of pedagogical and psycnological sciences, etc., as well as by the above-mentioned particularities inherent in the structure of the management system in education, at present it is impossible to ensure efficient management of education, while using traditional methods and techniques.

The solution of this situation consists in the elaboration and introduction of information systems based on computers, and in the automated sector management system in education of the Ukrainian S.S.R. /ASMSE/ using the IS as its basis.

The Central Computing Centre of the Ministry of Education of the Ukrainian S.S.R. /CCCME/ was entrusted with the elaboration of the ASMSE representing a complex of administrative, organizational, and economic and methodical measures enabling informational, linguistic, programme and mathematical logistics, making it possible for the managerial authorities of the Ministry of Education of the Ukrainian S.S.R. to increase the efficiency and quality of the management with the optimum utilization of material, labour and financial resources in the sector, and better service to the users of the system of scientific and pedagogical information.

The ASMSE consists of the following functional subsystems:

- perspective development of the sector and the distribution of a network of educational institutions,
- current sector planning,
- operative management,
- management of financial activities,
- planning and wage analyses,

- management of material and technical supplies,
- management of capital construction,
- registration and analyses of cadres,
- account files,
- registration and processing of state-wide statistical data,
- registration and analysis of the scientific and pedagogical reports.

Subsystems 1-10 cover information for the needs of management . Subsystem 11 is earmarked for scientific information. The basic tasks, solved within the framework of this subsystem, comprise the following complex of questions:

- registration and analysis of textbooks and methodical literature concerning the process of education and instruction, and literature found in the holdings of educational institutions of the Ukrainian S.S.R.,
- bibliography of novelties dedicated to the educational and instructional process,
- registration and analysis of visual teaching aids and technical materials existing within the system,
- registration and analysis of teaching and methodical material in sound recording archives,
- deposition and processing of texts and documents,
- analysis of questions and requirements of readers, etc.

The information acquisition in the ASUON represents a complex of a uniform system of classification and coding of the scientific information, unified documentation systems and information sets used within the system. Within the process of elaborating the information acquisition:

- there is arranged a survey of indicators used within the system,
- there are established information and time connections between the tasks,
- there are elaborated and approved the forms of input and output documents,
- there is determined the composition and structure of the optimum distribution of information systems on machine carriers,
- there are determined supervision methods of the input and output information,
- there are elaborated the descriptors and indicator term guide-books,
- there are determined the surveys of departments responsible for the transfer and acquisition of information, as well as the time-limits, methods, and periodicity of their acquisition and expenditures,
- there are organized the sets of directive information and reports in computer memory,
- there are solved the questions of deposits, storage, and and repair of the sets of the directive and referential information.

The information sets are established with regard to their potential utilization in the work of the automated informational and referential system /AIRS/, and to form the automated data bank /ADB/. The majority of the tasks included in the AIRS enters the subsystem: registration and analysis of the pedagogical, scientific and referential information.

The elaboration of the AIRS will enable the centralization of the information acquisition of the organizations and institutions of the Ministry of Education of the Ukrainian S.S.R., to accelerate the exchange of information by utilizing mass communication media and data transfer, and to ensure the connection with the ADB for a greater number of users.

The creation of the ADB is a very important moment in the operation of the AIRS. A given complex of data reflecting the state of the subjects and their relations within the considered subject sphere is understood under the term of data base. A management system of data banks is being created for the management of the data basis - a set of linguistic and programme means, assigned for the creation, management and joint utilisation of basic data by the users. It is precisely the ADB that constitutes the organizational framework for data bases and management systems of data banks.

In order to secure that the utilisation of the ADB would form a profound step forward on the way to the improvement of information exchange in the field of education, it is necessary to gain highly qualified experts of the school system, librarians, mathematicians, programmers, system engineers, and other specialists for the elaboration of the ADB, who are interested in the solution of this question, because it is possible to create an efficiently operating local AIRS only under the condition that the forces of these experts will be united.

The creation of the information system in the field of education of the Ukrainian S.S.R. includes:

- examination of the functioning process of the sector and elaboration of projects for the improvement of the information system,
- creation of the network of computing centres with modern automatic computers,
- creation of the ADB and AIRS,
- creation of information centres with modern means of collection, transfer and expression of information,
- ensurance of cooperation with other ministries, first of all with administrative bodies that are connected with education,
- ensurance of compatibility with the state-wide system of communication,

The creation of perfect information system is determined in many ways by its technical provision. The technical provision of the ASMSE of the Ukrainian S.S.R. that exploits the information system includes the complex of technical means /CTM/ for the preparation, collection, storage, transfer and processing of information necessary for the ensurance of the process of functioning of all subsystems and individual tasks of the system as a whole. CTM of the ASMSE of the Ukrainian S.S.R. is formed on the basis of technical means of the third generation of the Uniform System of Automatic Computers within the framework of the C.M.E.A. /USAC/. The transfer of information for the needs of management within the Ministry of Education of the Ukrainian S.S.R. and the CCCME is carried out telegraphically by means of the cable.

The technical perfection of the information system is assumed mostly during the 11-th Five-Year-Plan, by means of formation of united computing centres /UCC/ at pedagogical faculties, together with the foundation of quick users' centres; included within the USAC, in the information centres, at pedagogical faculties and in scientific and research institutes. Users' centres established at the Ministry of Education of the Ukrainian S.S.R., at scientific and research institutes and at pedagogical faculties will be equipped with the alpha-numeric display units.

The ASMSE can be united with the republic-wide computerised system of management of the national economy of the Ukrainian S.S.R. and with the union-wide standard of the sector CSM of the Union of the Soviet Socialist Republics' education.

To conclude I would like to state that the development of the information system equipped with computers will enable the substantial increase of the efficiency and quality of management in the field of education in the Ukrainian S.S.R., it will consederably intensify the scientifice-educational activity, and information will be more comprehensive, more significant and more accessible for users. There will be simultaneously formed new ways of international cooperation on the basis of new means and this will serve to the further progress in the area of the European region of the UNESCO, as well as all over the world.

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RESEARCH IN THE FIELD OF EDUCATIONAL INFORMATION IN BELGIUM

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Before sharing our impressions of various papers, I would like to say a few words concerning the research work in that part of my country where the Dutch language is spoken. The universities and various scientific centres, engaged in the development of science in general, and mostly in the educational system, achieve excellent results. But our researchers concentrate their attention very often to a career somewhere abroad, which means that it is important for them how their personal talents are evaluated abroad. We have no centralized organization in our country, as it is the case in other countries, which would collect and disseminate the results of the research, both basic and applied. But every research centre publishes its own work in specialized periodicals, which can be found in our libraries. According to circumstances, these works sometimes appear in documentation centres abroad. The Ministry of Education proceeds in the same way with the administrative and statistical documentation material. The proportion of randomness with this kind of publishing is, unfortunately, rather high. I have to stress that the activity of every single individual is very highly appraised in our country. From the above facts it is evident that the foreign research workers have no overall knowledge concerning the contribution of the Belgian science to the development of thought. The initiative in this sphere was assumed by the Minister of Education. He set up a commission and entrusted it with the task of investigating all the ways and methods that could change this situation administratively. Under my chairmanship, the Commission has formulated concrete proposals for improving the summarizing of research and its results, while rationalizing the organization of work. The Minister is convinced that by virtue of this new organization, the activities could be substantially improved and made more efficient. I should like to make you familiar with bilateral activites, introduced within the field of information dissemination. Proceeding from the wish voiced by the Council of Europe, and mostly by Mr. von Muthius, a group of experts from the Netherlands, and from the Dutch-speaking region in Belgium, held a joint meeting, so as to study the possibilities of establishing a regional organization, which would present the results of the work of our two countries to the international community. It is obvious that this initiative should link the documentation and research in the Dutch-speaking area. It is my duty to inform you that upon the initiative of our colleague, Mr. de Regt from the Netherlands, this Commission was entrusted with a significant task. We will try to do our best to overcome the language barrier, so that we could work for the benefit of the international community. The project envisages the elaboration of surveys concerning the work of our researchers in one of the Council of Europe or UNESCO languages. The language problem was discussed at our last Colloquium. That is why it is unnecessary to stress its importance. Thanks to the activities of the bilateral group, it will be possible to coordinate the research concerning education in both our countries. The rationalization of the joint work will result in savings of resources and time. It stands to reason that such division of labour in research would enable either party to profit from the work of its counterpart.

We have tried to draw your attention to this experiment, because it could inspire some other concrete initiatives of similar character. We are of the opinion that the dissemination of research results in foreign countries is very useful. Joint work will contribute to more profound international understanding.

In the second part of our paper we would like to make some observations with regard to the problems raised during the Colloquium.

We have been enormously surprised by the excellent organization of the dissemination of educational information in the individual countries. The responsible authorities strive, by all means possible, for establishing effective contacts with professors, school administrators, parents, evidently interested in the results of scientific research and in new conceptions in education and instruction. The Colloquium has informed us that there are several methods in this respect. On the one hand, there is the central authority of the respective country publishing important documents. On the other hand, there are specialized bodies accumulating everything published in the sphere of the development of education, according to the topics specified by specialists. The third system is a combination of the two preceding ones. I must say that in our country we tend to have only limited confidence in documents or articles, published and disseminated by the central authority. It seems that in such an information system only those things are published which we want to users to know about. If we choose the other technique of documentation, a group of individuals or a single individual can consult freely a number of data, according to their requirements and interests. Whatever the technique, the selection of the published data is determined by several specialists. Until now our Colloquium considered techniques of information work, which is, of course, the substantial matter, but it seems to me that we have forgotten all about the importance of information content. If we consider this problem, we have to admit that the content depends upon the influence of our activities upon the users. We wish that our influence be as profound as possible.

And now, please, allow me to come back for a while to the question of selecting data presented to the users. When the central authority undertakes to disseminate information, its well-educated and selected expert classify the documents. Every country hands over the results of its work to other countries. If a private organization is engaged in this work, the selection is done by specialists working in teams and operating according to standards determined by them. In both cases they may commit a fundamental error. The results of scientific research and articles describing new ideas need not correspond with the needs and interests of the users. In that case a gap between information producers and receivers would emerge. This explains partly the routine approach of some workers, mentioned by one of our colleagues. In order to alleviate such consequences, it is necessary to elaborate a technique enabling the users to convey their opinion concerning the data and unsatisfied requirements. This constitutes, in my opinion, an important problem and it is enevitable to examine it carefully.

I would like also to ask, whether it has become quite clear that very often there exist considerable differences between the distribution technique, and the information content according to the categories of users approached by us. Professors, school administrators, parents and the public in general, represent social groups responding differently to innovations and raising different demands. The problem consists in the selection of information suitable to the individual groups. Their sensitiveness is also different. The technique enabling the users to get acquainted with new data will be visual according to the case in question. I wish to point out that these are major psychological problems, I should like to reiterate that it is imperative to bridge the gap between the producers of techniques of information dissemination and the users. The whole anticipated system can lead to negative results manifesting themselves as inertia which we have already mentioned, and opposition which would be much more serious.

Otherwise, it would be illusionary to believe that the international community can consider a new form of cooperation in the field we are interested in. Priority topics, which should attract the researchers' attention in all the interested countries, could be conveyed to all those who want to participate in information activites. These would be topics subject to our common attention in the following ten years. In this manner, genuine cooperation on an international scale, not only simple registration of information, as practiced abroad, would come into existence.

In conclusion, I should like to say that I quite agree with our colleagues who have stressed in the course of this Colloquium that it is necessary to disseminate pedagogical information within the field of educational information - but also information of socio-economic and financial character. In the agitated times of ours all information users should realise that the organization of instruction and the value of education encounter difficulties occurring within the constantly changing society. These difficulties are, as is well-known to everyone, of social, economic, financial, and also philosophical character.

INTERNATIONAL COOPERATION IN THE FIELD OF SCIENTIFIC AND EDUCATIONAL INFORMATION

Raina Todorova, Director of the Institute for Pedagogical Research, Sofia, People's Republic of Bulgaria

Introduction

Scientific and educational information belongs to the sources of international character. Ever greater attention is devoted in our country towards providing information from other countries to the experts in the field of education. We are interested in the main principle of work, anchored firmly in a number of governmental documents, concerned with problems of education and scientific and informational activities.

The resolution of the General Assembly of the Central Committee of the Bulgarian Communist Party on problems of education, adopted on July 31, 1968, underlines that the workers in the field of national education must implement its reconstruction and ensure the further development of teaching

- while drawing from the national traditions and experiences of the Bulgarian educational system, and
- being animated by the example and enormous successes of the Soviet educational system and progressive educational thinking all over the world.

In the conception of the creation of the national system of scientific and technical information, approved by the resolution of the Central Committee of the Bulgarian Communist

Party and by the Council of Ministers, it is stressed, that the creation and functioning of the system of scientific and technical information must be realized in accordance with the system of scientific and technical information of the U.S.S.R. and with the International System of Scientific and Technical Information.

The Final Act of the Helsinki Conference on Security and Cooperation in Europe has launched new possibilities for broadening bilateral and multilateral cooperation and for creating conditions of exchange of information among the UNESCO member countries.

These governmental documents confront us with a task of consolidating contacts with the organs of scientific and technical information in the world.

Objectives

We pursue the following objectives in international cooperation:

- by means of providing information on new successes of pedagogical science in other countries to increase the standard of information services, which form a very important link in the perfection of management in the field of education, growth of efficiency of scientific and technical research and results of practical experience acquired at schools;
- by means of utilizing the division of labour to remove duplicity in informational processes;

- more extensive exchange of experiences regarding the organisation and functioning of informational organs.

Organization of International Cooperation

We devote special attention to the requirements concerning the improvement of cooperation among the socialist countries in the field of information. The complex programme of cooperation and development of socialist economic integration envisages the gradual establishment of the International System of Scientific and Technical Information on the basis of cooperation of national systems of scientific and technical information, on the basis of the creation of international branch systems of scientific and technical information, international specialized information systems, international systems in the field of selected problems, on the basis of activities of the International Centre of Scientific and Technical Information. The International Social Science Information System, within the framework of which scientific and educational information will be developed as a subsystem, has already been in existence.

Our cooperation with the information bodies abroad develops in two directions:

- via bilateral, and
- via multilateral cooperation.

This cooperation develops, first of all, in close contact with the ever more intensive connections among scientific educational workers of the socialist countries, thus implementing the decisions made by Ministers of Education of these countries.

Likewise, there are direct connections with the individual informational bodies charged with educational information.

Methods, Means and Forms of Cooperation

The essential form of this cooperation is the exchange of scientific and educational information. Our attention is thus focused on the exchange of both primary and secondary documents:

- decisions made by the Congresses of the Communist and Workers' Parties of our countries in the field of education;
- fundamental normative documents;
- curricula, syllabi, textbooks, methodical aids;
- fundamental publications of the scientific and research institutes;
- statistical collections;
- pedagogical and methodical journals which cannot be subscribed in advance;
- central educational informational publications;
- catalogues of specialized pedagogical publishing houses;
- lists of library acquisitions;
- articles and other materials reflecting experience gained the field of informational activities and librarianship.

Allow me to express my gratitude on behalf of our Centre of Pedagogical Documentation and Information to representatives of the informational bodies and the BIE for the information provided.

Information acquired by various means /informational editions, publications, papers from seminars dedicated to training the users, displays of books, etc./ is circulated to officials, scientific workers and teachers.

The exchange of the above-mentioned publications has already acquired certain traditions, but it is necessary to develop much more intensive mutual international exchange of information with the help of increased volume of information and expanded coverage zone of documents /information concerning international events, authors' reports, dissertations, etc./.

Pedagogical libraries play and will play an important role in information transfer. The strengthening and development of their mutual cooperation, as for instance the dissemination of not easily obtainable literature, the ensuring of yet closer cooperation among libraries and information centres are of particular importance.

Scientific journals are also very important for the dissemination of scientific and educational information. We are convinced that no other means of information transfer will take over their task in the nearest future. The interrelationship between primary and secondary information is ever more closer, with their interests integrating. This is clearly visible in publications of reports and articles in journals and in UDI indexes, sometimes even in keywords. It would be reasonable to include in the recommendations also an item concerning the cooperation among editors of educational journals and information centres with a view to accelerating the process of information processing, and improving the system of abstract elaboration, and reducing the costs.

Another form of bilateral and multilateral activities performed on the basis of the division of labour resides in joint elaboration of thematic bibliographies devoted to topical problems comprised in the plans of central educational, scientific and research institutes of the socialist countries, personal bibliographies, issued on the occasion of jubilees of important educationalists/A. S. Makarenko, K. D. Ushinski, A. Frobel/.

In recent years a higher form of multilateral cooperation has been developed - annual joint publication of the information bulletin "Pedagogy and Education in the Socialist Countries" /in two series - a thematic and a survey one/. The above bulletin helps to increase the efficiency of scientific and educational research, and to accelerate the rate of speed in the application of successes of educational science and good experience to practice. The publishing of the informational bulletin on the basis of coordination and international division of labour is in accordance with the development of cooperation among the C.M.E.A. member countries. The involvement of scientific workers in preparatory works concerning the above bulletin is an important factor contributing to its higher quality.

In addition to the above-mentioned forms, the long-term programme of cooperation of information bodies of the socialist countries embraces also new forms: analyses of the current situation with regard to the educational information organs in the socialist countries, elaboration of uniform principles for the organization of information machinery as the basis of scientific and educational information, elaboration of uniform methodical documents concerning the organization of work connected with the joint publishing activities, the pedagogical thesaurus, etc. Some aspects of these problems were evaluated and elaborated at joint sessions in the past.

When speaking about positive aspects of cooperation among the socialist countries, we can note that the activities of the International Bureau of Education in this field have been extending since 1974. Among the means of information developing multilateral cooperation, also informational publications /bibliographic ones and papers/ of the International Bureau of Education, with which we cooperate through the National Commission for UNESCO should be mentioned. This helps in popularizing the Bulgarian educational literature abroad, by means of authoritative information publications, with the help of which our experts become acquainted at the same time also with successes attained in other countries. These means of information could be used much more efficiently and widely in our country, if they were published in Russian.

A very important form of multilateral cooperation is the exchange of experts in the field of educational information and librarianship, on a barter basis, and periodical meetings of officials of educational information institutes /Potsdam, German Democratic Republic - 1975, Budapest, Hungarian People's Republic - 1976/. At these meetings the existing forms and methods of joint work respecting various conditions in the individual countries, are discussed, problems the solution of which would contribute to further development of multilateral cooperation, and to the resolving of topical issues arising during the creation of the uniform system of scientific and educational information in the socialist countries are considered. The results achieved can be explained by the help rendered by the educational authorities.

The experiences show that we have to make use of the fundamental forms of the present cooperation also in the future, while our efforts should be directed towards improving organization and enhancing the efficiency of these forms.

The intensity of the various above-mentioned forms of cooperation differs. The realization of all these forms confronts us with a number of problems. The pre-condition for the improvement of international cooperation in the field of scientific and educational information is the perfection of activities of national information centres. These centres should be supplied with quick and suitable information applicable both at home and abroad.

Experiences gained during such bilateral and multilateral debates which have become the school for exchanging experience and for developing cooperation, enable us to presume that the results of our meeting here, in Bratislava, serve the theoretical clarification as well as the practical solution of a number of significant problems. Our information centres will thus contribute to further development mutual understanding and cooperation among nations of the European countries in the spirit of the Helsinki Conference. We express our thanks to the management of the Institute of Educational Information, to Mr. J. Lihotský, and to all the workers of this Institute, for excellent organization of this Colloquium.

MULTILINGUAL INFORMATION LANGUAGES

Solution for Smaller Language Regions

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Introduction

The modern technology of documentation and information, making use of the computers, has gone through an interesting development during the last years. This development in the sphere of educational documentation culminated in the year 1973 by the publication of a multilingual thesaurus for information processing in the sphere of education and the Thesaurus for Education UNESCO-BIE.

The Thesaurus of Descriptors ERIC was published in the year 1966, followed by the Thesaurus of Educational Terms for the retrieval of information, by G. C. Barhydt and C. T. Schmidt, published in the year 1968.

The term thesaurus is an old word. It was used already in the Middle Ages and, at that time, its meaning was identified with that of a dictionary. This term is common in the circles of librarians, documentalists and in the information science since the sixties. It has acquired the meaning of a specialised list of terms, which should be used in the activities of the information systems, in the storage and retrieval of information. The semantic thesaurus has become the thesaurus of information.

The multilingual thesaurus is comparatively young among the various existing informational thesauri. An example of such a multilingual aid is the thesaurus EUDISED.

Multilingual Thesaurus EUDISED

EUDISED stands for the EUropean Documentation and Information System for EDucation. Thesaurus EUDISED was compiled by an international group of experts in the field of education, who cooperate in the working group of the Council of Europe.

The thought of setting up EUDISED comes from the years 1968/1969, it was initiated by the Council for Cultural Cooperation, in which 22 countries, within the framework of the Council of Europe, are associated.

EUDISED started to exist as an information system for the decentralized connection between the national documentation and information centres.

I will not go into the history of the EUDISED development, but I will confine myself only to a few remarks, concerning this thesaurus.

The initial work was concluded in the year 1973. The computer created at that time a copy of the multilingual text. Simultaneously three identical versions were published in French, German and English.

The main objective of the EUDISED thesaurus is to ensure the convergency and compatibility of undertakings in documentation and in the educational sciences in a group of countries. It is compiled with regard to the international network for the exchange of information. Its objective is to achieve a certain balance in every language version among the needs demonstrated directly in the countries engaged and also outside them.

The principle of multilinguism was asserted since the very beginning. So as to be able to control national standpoints in the language of information, and to form an instrument facilitating the international exchange of information in all main languages, spoken in the respective region, a fair share of attention is required, and the strict equivalence through the selection of descriptors has to be ensured.

Such a procedure of the development group was most probably the only way how to achieve really true multilinguiusm. This work was approached simultaneously in three language zones, and in three working groups: English speaking - the United Kingdom of Great Britain and the Northern Island and Scandinavian countries; French speaking - France, Belgium and Switzerland; German speaking - the Federal Republic of Germany, Austria and Switzerland.

Every group tried to record in its language the context, concerning the education, as it is anticipated in the national research and information centres, so as to suit the needs of users in the countries concerned. The group moved to comparing notes, to necessary adjustments, and to the search for language equivalents only after the lists of descriptors were ready. The final product of this method is a thesaurus in three versions, which reflect the same reality.

Prior to the preparation of a version for a relatively small language region, it was not clear, how great is the interest of small countries in elaborating their own language version.

The following remarks issue from the experience, acquired in the elaboration of the Dutch version of the EUDISED thesaurus.

Experiences with the Dutch version

So as to be able to understand the difficulties which encountered the experts when creating this version, and so as to classify their experiences in the correct context, it is necessary to devote certain attention to the basis of the EUDISED project.

The main objective of cooperation in the framework of EUDISED is the exchange of information. The working group defined during the first discussions in the year 1968 certain fundamental ideas concerning the process of information exchange, for instance:

1. Uniqueness of every national educational system. We know from experience that it is the cultural inheritance, which should be paid the greatest attention. At the same time, there exists also lively interest in educational systems of other countries.
2. Need to create an instrument in the form of a multilingual aid for exchange of data and, at the same time, the necessity to understand the difference between the translation of educational terms and the specification of equivalents.

3. Dualism in the information exchange. On the one hand it embraces the mechanism of flow of information and, on the other hand, problems with understanding the contents of documents written in a foreign language.

The setting up of EUDISED means the free flow of educational information, i.e. educational data. If this objective is reached in the future that will mean that the purposes of EUDISED are realised.

This system was not designed to function primarily as the direct help in understanding the texts in foreign languages. But this problem seems to exert a great influence upon the realization of EUDISED.

Sometimes the representatives of widely used languages seem to devote only little attention to the problems of smaller language territories. Sometimes they refer to their own languages incorrectly as to the official languages and they try to shift the burden of translation to their smaller language partners, who generally speak other languages, and consequently they have less problems with understanding documents written in foreign languages.

The concept of the free flow of multilingual information, as it is being realised in EUDISED, has a number of advantages, e.g.:

- No more excuses that justify the lack of knowledge. Information in other /less known/ languages can be known.
- Language barriers do not exist anymore in this context. Just the contrary, differencies in culture and in sciences only contribute to the overall characteristics of culture.

Problems in preparing the Dutch version

We have not followed the easiest way. We had in mind the examples of larger language territories, and so we were searching closer cooperation between the Netherlands and that part of Belgium where Dutch is spoken.

We created a mixed working group and it was possible to create the Dutch language version in a remarkably short time.

The most important problems we came across here, consisted in preserving the adequacy of terms and the correspondence in presenting descriptor relations.

Adequacy of terms

To reach the adequacy of terms in a thesaurus, i.e. descriptors, is much more difficult than to reach the adequacy of terms in natural languages. Descriptors are "words" of an artificial language, i.e. language of documentation or information. This equivalence in the documentation language depends on:

- semantic equivalence,
- the same level of semantic pre-coordination of descriptors,
- syntactic equivalence, descriptors have to be used from the same viewpoint,
- and consequently, there must be adequacy of classification in facets, or in the systematic groupings.

Agreement in descriptor modules

Descriptors are usually introduced in the thesaurus with the semantically and generically related terms. The unity of these related terms is called the descriptor module. We have found out that one of the main problems in constructing the Dutch language version was the preservation of agreement of the Dutch modules also in such cases when the main descriptor was equivalent with foreign terms.

National thesaurus for education versus the national version of the EUDISED thesaurus

As the EUDISED thesaurus had to play a certain role in the international exchange of information, in the interest of facilitating such exchanges, there had to be drafted the common language basis for users in different countries.

And then the specifically national terminologies had not to be taken into account. There had to be rejected first of all any terms which are being used in the given language for the designation of various institutions, teachers of the same levels or qualifications, which have no equivalents in other languages.

The construction of the national thesaurus for education /including the national version of the EUDISED thesauruc/, is an activity which represents more than merely elaborating a supplement.

The integration of terminologies, which have not been taken into account in the construction of the EUDISED thesaurus, has led to visible differencies between the national thesaurus and the versions of EUDISED thesaurus.

Differences are, for instance, the following ones:

- The national thesaurus for education is normally monolingual. Descriptors are equivalent with the descriptors of EUDISED and they must be able to prove this identity.

- There are differencies in equivalence, because some descriptors have no equivalents.
- There are differencies in the agreement of descriptor modules. Basically, these modules comprise all relations presented in the EUDISED version, but may have to be referred to also secondary relations.

The following two methods may help solve the problem of increasing the number of descriptors.

It will be possible to introduce a new term as a synonym in a number of cases, and to assign to it the position of a term used instead of another one. In this case the term will appear in the module. In other cases the only solution to these problems will be to use the term as a new /introductory, starting/ term in the module, without any reference.

SOME RECENT DEVELOPMENTS IN AND FUTURE PROSPECTS FOR THE EDUCATIONAL INFORMATION SYSTEM OF THE UNITED KINGDOM VIEWED FROM THE WIDER EUROPEAN CONTEXT

Jim Davies, Head of Information Division at the
National Foundation for Educational Research in
England and Wales, Great Britain

The rapid advance of computer technology and the increasing application of computer techniques to the fields of documentation and information science are key features of the last decade. Within the last few years educational information systems, understandably lagging somewhat behind the mechanised information systems of the pure sciences and their associated technologies have begun to exhibit some of the features of the latter.

Networks and networking are increasingly prominent although there is still confusion as to the exact of these terms. Nevertheless, most would agree with Miller and Tighe (8) that networks must have the following characteristics:

"(1) a communications component and operate through a communications technology (e.g. telephone lines, cable, microwave, radiowaves) rather than face to face

(2) have a set of protocols, or procedures to which users must conform to effect communications

(3) have fairly clearly defined service goals to which managers subscribe and that are describable to users".

Some of the confusion has arisen in trying to distinguish between library and information networks. I would like to paraphrase the words of Professor Brian Vickery who spoke on the subject at a recent ASLIB meeting (10) in which he said that both types of network handling bibliographical records had developed in parallel but oddly enough until very recently they had been maintained as completely seperate systems. Only now was a pattern of integration emerging but this would lead to the increased interdependence of those components in the library and information systems.

This seems to me to describe the situation admirably.

Using the definitions of Miller and Tighe and Professor Vickery let us look at pertinent networks. Within Western Europe, the main development has surely been the EUDISED initiative. Although well known to you, it is worth summarising the main features of this influential programme (6, 7).

"EUDISED had its origins in a survey of the educational documentation and information system in Europe carried out by the Documentation Centre for Education in Europe in 1967 ... Following this report, a meeting was held, in Strasbourg in September 1968, of experts from member states of the Council of Europe in which experiments in the application of computer techniques to educational documentation were under way. The report of this meeting was submitted to the Council of Cultural Cooperation of the Council of Europe in September 1968 and the Council then set up a working party on the application of computer technique to educational documentation and information. The working party's report was considered by the Council's Committee for Educational Documentation and Information, which proposed the establishment of a Steering Group for EUDISED ... As a result of the report, two working parties were set up by the Committee for Educational Documentation and Information in April 1972. The first was concerned with preparing an agreement on the format and standards for Eudised, the second with elaborating the Eudised Multilingual thesaurus. Their work was completed by the end of 1973 resulting in the publication of Eudised standards, format character representation and Eudised multilingual thesaurus. Further technical studies were published in 1974.

By the spring of 1974 the preparatory stage of the project had been completed and it began its operational phase on an experimental basis in the field of educational research and development. This involved the collection of information on research in progress and completed, and on national pilot projects of educational reform in various member countries and the publication of computer printouts containing abstracts of the projects."

Within the U. K., substantial development within this framework has taken place.

The National Foundation for Educational Research (NFER) maintains a research project within the Information Division which was initially a feasibility study designed to explore the possibility of producing a comprehensive register of on-going educational research in the United Kingdom- given that over 30 register of educational research were in existence each covering its exclusive area of interest without a clear overview of the total educational research scene in the U.K. being in evidence. The study began in September 1973 and the first and second phases of the project were completed in September 1976. Funded by the Department of Education and Science and the Social Science Research Council, the aim of the project was to produce a complete register of research covering the years of the projects´ life in published format (5, 9). Over 2000 projects from some 280 institutions were recorded in depth and fully indexed. The register was published in January 1977 and Phase III was funded to produce two further annual registers. Although the national function of this venture has been of paramount importance, the project has been seen from the outset as a component within the Council of Europe´s European Documentation and Information Systems in Education Network. Thus, subject indexing was derived from the thesaurus classification which was the English contribution to EUDISED. Computerization of the data as an intermediate stage in the production process of the published Register was embarked upon, with the British Library, in order that the ensuing data base ("the UK data base of current educational research information") would contain a sub-set of data which would form part of the European Data Bank, maintained by the Council of Europe, from which the EUDISED R and D Bulletin series would be derived. Unfortunately, progress in all participating countries did not proceed at the same rate as in the U. K. and it would be untrue to claim that a computer-based network for the exchange of educational information was in existence in 1976. Because of this, input to the R and D Bulletin series in 1976 was based on manually completed worksheets centrally processed despite the availability of compatible computerised data from the U.K. and some other countries. However, it is anticipated that the U.K. will substantially increase its input to the E. D. B. in 1977 and that this will be done through computerized data exchange.

The Council of Europe (4) states that the transfer of R and D information is the most advanced part of the EUDISED system. Nevertheless, other aspects of the work have met with considerable interest i. e. work on educational periodicals (EUDISED EP) which has now unfortunately been adjudged not to be entirely ripe for development and the EUDISED AV where the establishment of a network of national agencies on similar lines to the R and D network, to deal with audio visual materials is regarded as a distinct possibility. Mr. Gilbert, Assistant Director of the Council for Educational Technology in the U.K. who guided a successful EUDISED AV experiment in 1975/76 will act as a consultant for this activity, the details of which are yet to be determined by participating national agencies.

Thus EUDISED particularly in the area of R and D Information transfer has made a considerable impact on the developing U. K. Educational Information System. EUDISED has now reached a state of conclusion and it has been recommended that "the project be taken over by the European Communities provided that a satisfactory solution for the further participation of the non-Nine interested in EUDISED can be found, and that the member governments concerned agree to a solution on these lines". (3) However as difficulties in continuing their cooperation in the project were envisaged by the non-Nine (4) if the European Community was to take over EUDISED work in its entirety, it was suggested that there be a tripartite cooperation between UNESCO, the Council of Europe and the European Community in the project. It was agreed to establish an "Inter-Secretariat Working Party for Educational Data Processing" which would comprise representatives of UNESCO/IBE, Council of Europe/Documentation Centre for Education in Europe, and the Commission of the European Community DGXIII. The aim of the Inter-Secretariat Working Party would be to coordinate and promote projects in the field of educational data processing, like the EUSIDED project.

Both UNESCO/IBE and the European Communities have already made a considerable impact in the instigation of new or rationalization of existing information systems in which the U. K. participates.

Possibly the most recent example of UNESCO/IBE involvement has been the remarkable attempt made to evolve and evaluate an International Adult Educational Information System. Here the results of a weeks productive work by international experts in May 1977 included the acceptance of an elaborated glossary of terms, the creation of a master file of directory type information from which a wealth of products can be drawn and the acceptance of an Adult Education thesaurus as a distinct but nesting concept within the UNESCO/IBE Education thesaurus proper. Developments which pave the way for further European and international cooperation. The involvement of appropriate U.K. Centres such as the National Institute of Adult Education and the Scottish Institute of Adult Education is assured and there is every expectation that the EUDISED nodal point for the U.K. located at NFER will be involved in the information transfer processes of Adult Education. Indeed, the fullest cooperation has already been established with the University of Manchester's project which will result in the Register of on-going research in Adult Education.

The representative of the Commision of the European Community/DGXIII declared (4) the Communities' interest in the continued publication of the EUDISED R and D Bulletin offering financial help from 1978 onwards. No immediate plans are afoot to incorporate the European Data Base within the EURONET operation which is overseen by DG13. Nevertheless in examining the development of Educational Information Systems in the U.K. from a European standpoint, it is worthwhile looking at EURONET (2).

The European on-line Information Network is being implemented by the European Communities to: (1) provide the user anywhere in the Community via screen or typerwriter with direct access to scientific, technical and socio-economic data; (2) integrate existing and future on-line information services in the Community into a commonly shared network on a cooperative basis; (3) make available for the first time a large variety of services operated on widely differing host computers in many different countries, via one single network.

EURONET's basic component will be an efficient international data transmission network that will be the first such system to be set up jointly by the PTT Administrations of the 9 Member States and so constitute a major breakthrough in international data communications. Based on modern packet switching technology, this telecommunications network will link information processing centres and user terminals, in both the public and private sectors, Community-wide.

EURONET is now being implemented. By mid - 1978, it is expected that around 100 data bases will be available on-line through EURONET, though its build up has already commenced. Appleyard (1) has said of EURONET that "we wish to create a Common Market in scientific and technical information with all of the advantages that this can confer. Information is a commodity which can be bought and sold like any other, even if its value does not diminish with use but rather the contrary occurs. The principles will be implemented in 3 ways: (1) by promoting the extension, combination or rationalization of existing services and where necessary creating new services/data bases (2) a commitment to on-line interactive access to computerised data bases and a developed telecommunications network through the nine. This physical network is the heart of EURONET (3). General support for training professional staff, selling to and training of users, transfer of information between languages".

We have already seen the possibilities of a EUDISED R and D link within this general system and with it of course full U. K. participation. However, there are other important consequences of EURONET's advent to consider for the U.K. Educational Information System. The advent of EURONET has helped provide a general stimulus to and increased interest in the development of on-line computerised information retrieval services in the U.K., EURONET and other international networking services now available in the U.K. have altered the climate of opinion and extended the range of vision of what is not only possible but practical now. Thus, it has been a background influence which has lead eventually to the development of such British Library Services as BLAISE which contains, even in its present form, a good deal of educational information through the MARC bases and its other resources. Not only is this so, but it is certainly hoped that BLAISE or its successor MERLIN will eventually be available on a European wide basis through EURONET.

It is worth considering here too that BLAISE (MERLIN) is operated through the British Library Bibliographic Services

Division. The BLBSD were responsible, it will be recalled, for establishing "the U.K. data bank of current educational research information" in computerized form and from this, "the Register of Educational Research in the United Kingdom 1973-1976" was produced. It is not impossible that this data bank might become a component part of any future BLAISE-type package. Furthermore, "the British Education Index" covering periodical articles has been produced by the BLBSD throughout this decade. It is MARC compatible and could form an invaluable part of an envisaged future package. In addition, plans are in hand to extend the coverage of BEI to encompass semi-published materials such as theses and research reports. The Council for Educational Technology also holds data bases produced through BLBSD. These too are MARC compatible. Thus it would appear that there is considerable scope for the Bibliographic Services Division to extend the BLAISE initiative into the U. K. Educational Information System and thence into Europe.

BLAISE is the British Library Automated Information Service. It is an on-line information retrievel service which began this year. Access is available through the scheme to the U. S. National Library of Medicine´s MEDLARS/MEDLINE (Medical Literature Analysis and Retrieval System) data bases, to CHEMLINE, TOXLINE, SDILINE and also to the U. K. MARC and other British Library data bases and to the Library of Congress MARC (The U.K. MARC file covers the majority of British copyright material back to 1950 and the Library of Congress MARC file will provide access to U. S. and other material back to 1968. In addition, post - 1971 accessions of the B. L. ´s Reference Division´s Department of Printed Books and other B. Library data bases will be available through BLAISE).

BLAISE is a fully operational British Library Service and will continue to operate until its services are taken over by the MERLIN (Machine Readable Library Information) System.

Thus EURONET in providing some stimulus and a potential avenue for exploitation of the current BLAISE package system has already aided the development of the U.K. Educational Information System. Futhermore, as we have seen, any subsequent package developed from a BLAISE type initiative might well include, in addition to the existing educational information in the MARC data bases, the BEI, A. V. data bases and the wealth of research information contained in "the U.K. data bank of current educational research".

However, the influence of the European Communities does not stop there. A strong initiative has been taken within the last year by the EEC with respect to the Educational Information Systems of Member States. A decision has been taken to set up an information network by appointing in each Member State a national information service on education in the Community. A realistic and practical approach was urged on each Member State with the aim of establishing a rudimentary operational network by January 1978. This network, consisting of information centres in each Member State and a Community Centre. will have the following objectives, functions and methods of operation:

1) The centres will serve as collecting points for requests for information from within Member States or from other Member States (originating from individuals, or organisations). They will provide a direct response on general enquiries relating to a particular system of another Member State.

2) They will have a referral function. They will deal with specialised enquiries by having recourse to the appropriate information "sub-unit" in their own country.

3) They will have a monitoring function, gradually building up a general picture of how to meet needs for different kinds of information and as a result would gradually increase their own capacity to answer questions directly rather than by referral.

4) Work should be undertaken which will allow easy transition to a mechanised information system.

Finally, evaluation and improvement of the network will also be a national centre responsibility.

The Community information point will answer questions relating to the Community as a whole and it might in due course become the natural way to find out what was happening in other international organisations because of its close relations with ILO, UNESCO and OECD.

A main initial aim of this network will be the servicing of policy makers within the Community Countries with appropriate educational information.

The Department of Education and Science has responded promptly to the request for the establishment of such a national centre in the U.K. and fruitful initial meetings with appropriate interested parties within the U.K. Educational Information System are under way. No conclusions have yet been reached, however, it is worth noting that a particularly useful element in the discussions has been the interest and support given to these proposals by the British Council which has substantial educational information involvement in Europe and a successful history of blending formal information and library services operating at a high level of efficiency with the informal information networks operated by professionals everywhere be they scientists, educationists or whatever. Thus, on the one hand it has consistently sought to link appropriate formal sources within the U. K. such as the superb resources of the British Library Lending Division with appropriate users overseas coupling this use with promotion of the existence of the best British Secondary services for exploitation of this information, whilst on the other hand encouraging the growth of "invisible colleges" between Britain and overseas countries on a reciprocal basis. It has built up knowledge in depth and a sympathetic understanding of the problems of all Common Market countries after years of perceptive involvement in Europe and has consistently acted to benefit all countries concerned and individuals.

In conclusion then and without attempting a summary of the above points it would seem that substantial interaction with European initiatives has encouraged in the recent past and is even now stimulating the U. K. Educational Information Systems to renewed growth.

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PAPERS PRESENTED

BY THE CZECHOSLOVAK PARTICIPANTS

UNIFORM REGISTRATION OF PUPILS AS A SUBSYSTEM OF THE INFORMATION SYSTEM IN THE FIELD OF EDUCATION

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Before you are shown the following example of the utilization of computing technique, allow me to present some information on the uniform registration of pupils. With the help of this example we will show you one of the possibilities of how to process mass data for the requirements of users.

The Uniform Registration of Pupils itself /further only the URP/ is a part of the information system of primary and secondary schools. The project came into existence as a natural reaction to the needs of practice, it ensued mostly from the effort to unify the existing scattered educational documentation in schools.

The basis of the project of the URP is the registration file of a pupil /RF/ which is a uniform educational and health evidence form consisting of seven parts:

G - general data on the pupil
A - living conditions of the pupil
B - interests of the pupil /theoretical and practical/
C - evaluational and professional orientation of the pupil
D - level of knowledge and education of the pupil
E - social behaviour and moral profile of the pupil
F - physical and mental health of the pupil.

The registration file of the pupil is filled in by the form master and school doctor /a pediatrician or adolescents' doctor/ with the methodic help of an educational adviser at school every single year in the first, fifth /fourth/, ninth /eighth/ forms, and in the highest forms of educational establishments. We propose such a solution since the collection of data concerning the pupil, and thus the process of collecting information on the pupil, is very exacting both formally and also from the point of view of contents. The authors of the URP are of the opinion that in such a way it is possible to avoid certain shortcomings prevailing in traditional statistics and, at the same time, to introduce a complex evaluation of the pupil.

The RP is adjusted for machine processing, both by its volume and graphical presentation. The confidential character of the above information is protected by legislative regulations, and also by the fact that for filling-in and processing a system of numeric characters is used.

The mission /and at the same time the function/ of the proposed URP is to secure scientifically processible and practically utilizable information on educational process at primary and secondary schools, on its results, and on the factors determining and influencing the former. The proposed URP has to provide, at the same time, a relatively comprehensive view of the personality of a young person, his development and his way of life.

A part of the RF are also the filling-in instructions, containing numbers of all columns of the RF, the wording of individual indicators /variants of the characters observed/ and a terminology vocabulary. The RF contains altogether 103 indicators, which means that we have to observe 103 data on every pupil from the age of 6 until 18. In addition to the before-mentioned materials the creators of information on a pupil have at their disposal also other aids.

The URP observes its objectives on three planes:

- First, it has to help the teacher in his everyday work at school. As the creator of information concerning the pupil he will be guided, at the same time, by the indicators to follow the most important indicators of the development of the pupil's personality.
- Second, the information should help the school authorities at all levels of management. By preparing background material for the decision-making processes, by evaluating the results of educational process in individual schools, districts, and possibly in regions, and by analyzing them according to the users' requirements, the URP creates conditions for the rationalization and gradual automation of the educational system management.
- Third, the information acquired by means of the URP should serve science and research, and also the survey of problems confronting the young generation, as the first probe, the results of which science and research can study more in detail by means of more intensive methods and techniques.

For the time being the information comprised in the URP will be processed by the Institute of Educational Information /ÚŠI/ in cooperation with the Institute of Computing Technique of Comenius University. At the same time the data are stored in the data bank, and some of the aggregate data are published by the Institute of Educational Information.

The processing itself, evaluation, storage, and dissemination of information pursue the objective of maximum operativeness, precision, standardization, and relevancy of the data. From the total of indicators we choose, at the same time, also the so-called profiling ones, i.e. the most important ones, which are processed further with the aid of mathematical and statistical techniques. Some of the evaluation methods contain also important axiological moments as a result of the fact that the individual is evaluated once from the viewpoint of the development of his personality and, at some other time, from the point of view of "riskiness" of his development. A similar approach is applied to the respective age cohort or region, etc.

Likewise, we wish to mention that the URP is, at the same time, linked with all information systems in the Czechoslovak Socialist Republic, the problems of which are contiguous with the individual 7 parts of the RF. The linkage is effected by means of integrating elements /e.g. the locality identification number, the pupil's birth number, profession classification numbers of his parents, etc./.

In our URP project we have tried for a complex conception of information in the field of education. Our research has shown that the individual information systems /e.g. VTEI - scientific, technical, and economic information, and SEI - social and economic information/ are very closely connected and interconnected. To stress one of them to the detriment of the other one would be tantamount to onesidedness contradicting the conditions of scientific and technical development of our society

At present, the URP is in the period of experimental test processing. In the past years the pupil cohort in the district Košice - suburbs was under study, and you will see an example thereof. The experiment follows, on the one hand, the validity of indicators, the preparedness of teachers and doctors for the work with the RF, the possibilities of processing and applying the results to practice, including automation, analyses and dissemination of information, the assistance rendered to bodies of school and health administration in the area in which the experiment took place, and on the other hand, the verification of the whole conception of the URP.

In the school year 1978/79 we expect another stage of experiment in 5 district of the Czechoslovak Socialist Republic /Praha 5, Teplice in Bohemia, Břeclav, Bratislava 1 and Košice - suburbs/. In the above districts we will endeavour to record the whole pupil cohort.

Since the programme equipment includes, along with many other options, also the linking to the computer, with the aid of a local display, teleprinter, etc., we have prepared demonstration of the work with the display.

The project of the uniform registration of pupils in primary and secondary schools represents a new, in some spheres pioneer way of the formation and processing of information on the pupil. It enables far-reaching rationalization changes, not only with respect to the formation of information on the pupil, but also it directly influences the style of work at school, mainly as far as the form teachers, school doctors and educational advisers are concerned. At the same time, the project contributes to quantitative and qualitative growth of knowledge by the State authorities which are in contact with the young generation, including social organizations, participating in education and in solving problems confronting young people. The project contributes most significantly to the management of education, both on the level of class and school and on the level of educational authorities by improving the degree of information, operativeness and by providing background material for the decision-making process and its supervision.

In the following 1977-1980 period we intend, in cooperation with the problem-solving team of interdisciplinary character, to finalize the conception of the URP and to elaborate the realization project in the framework of the State Plan of Economic Research SPEV-V-2-12 /Automated Management System in the School System/.

UTILIZATION OF THE GOLEM SYSTEM IN PROCESSING THE UNIFORM REGISTRATION OF PUPILS

Zuzana Šimovičová; Ing. Juraj Krištofič, Institute of Computing Technique of Comenius University, Bratislava

During work on the first stage of processing the uniform registration of pupils /UNP/, the GOLEM system was used on the SIEMENS 4004/150 computer installed at the Institute of Computing Technique. The above-mentioned system offers quite a number of advantages, important in the first stage of research processing since it enables to establish the data bank in a very simple way. At the same time, the system enables by means of a dialogue, the entire problems solving team to show very easily and graphically feasibilities of the system being formed, and to solve operatively problems emerging during the solution of the project.

The above advantages were of a great importance and useful during the experimental processing of the project, and the consolidation of the team consisting of workers having various kinds of profession.

The GOLEM 2 system produced by SIEMENS is a general-purpose information system enabling the formation of its own data bank, managed by the system itself. The data bank can be extended and changed according to needs. The security of individual data, or of the whole data bank can be ensured with the help of the "Golem keys".

The GOLEM 2 information system is a system earmarked for storage of information sets and for systematic quick retrieval of the stored data with the help of retrieval questions /search queries /, and the conversation with the computer. The data to be processed by the GOLEM 2 system should be in a form of a record compatible with this system. Retrieval terms - descriptors should be marked. The information consisting of the final number of descriptors is called in the target information /documents/ the GOLEM 2 terminology. The length and construction of the target information /document/ is practically optional /the limit is approximately 500,000 characters, that is about 200 typed pages. The GOLEM information system offers a survey of individual descriptors in the data bank and of their number /thesaurus/. Furthermore, there exists the possibility to form various logical combinations and liaisons among individual descriptors, by means of retrieval questions /procedure SUCHEN - retrieval/. Every single descriptor is directly accessible with the aid of the inverted file, created within the GOLEM system. Each procedure /SUCHEN, THAUS/ make it possible to retrieve immediately any item in the data bank.

The individual parts of the data bank are stored on disks, and the method of processing stored information is possible, in addition to the direct approach via the terminal, also with the help of conventional processing on punched cards /BATCH processing/. Along with direct observation on the terminal display, the required outputs can be recorded in print. Further possibilities of processing the data obtained through the dialogue or the BATCH processing, are provided for by the user programme itself.

When processing the uniform registration of pupils, the target information is obtained from the input information carrier, represented by four punched cards, in which all the required information is encoded. In the following processing step this information is converted to a form, compatible with the GOLEM system input.

One target information in the URP includes more than one hundred descriptors.

In the future, during further stages of data processing of the uniform registration of pupils it will be imperative to solve, first of all, the question of generating and processing the time strings and of their utilising for prognostication.

EXAMPLES

BIRTH-NUMBER : 6006106062
SEX : BOY
YEAR-OF-ATTENDANCE : 9-TH
SCHOOL-YEAR : 74/75
SCHOOL-CODE : 1 1020051
MUNICIPAL-SCHOOL-CODE : 1331521299
MUNICIPAL-RESIDENCE-CODE : 1331521388
NATIONALITY : SLOVAK
PUPIL-LIVES : WITH-OWN-PARENTS
NUMBER-OF-FAMILY-MEMBERS : 8
EDUCATION-OF-FATHER : CONCL-PRIMARY
EMPLOYMENT-OF-FATHER : DIFFERENT
EMPLOYMENT-CODE-OF-FATHER : 6810
EDUCATION-OF-MOTHER : CONCL-PRIMARY
EMPLOYMENT-OF-MOTHER : DOES-NOT-WORK
EMPLOYMENT-CODE-OF-MOTHER : 0730
RELATION-TO-BROTHERS-AND-OR-SISTERS : HAS-OLDER-AND-YOUNGER
CATEGORY-OF-FLAT : 2
NUMBER-OF-ROOMS : 5
FLAT-SITUATED : IN-HOUSE-WITH-GARDEN
SUBJECTS-IN-HOUSE : 1
CHAR-OF-CLOTHES : 0
MOTHER-TONGUE : SLOVAK
EDUC-REGIME : 1
CLASS-COLLECTIVE : COHERENT
ACTIVITY-IN-INFORMAL-GROUPS : 1

```
WORK-CONDITIONS                              : GOOD
SYSTEMATIC-HELP-WITH-LEARNING                : HAS-NOT
UNSYSTEMATIC-HELP-WITH-LEARNING              : HAS-NOT
ATTENDANCE                                   : 30 // MIN//
ABSENCE                                      : 19 //TEACH-UNITS//
ABSENCE-UNAPOLOGIZED                         : 3//TEACH-UNITS//
INTEREST-IN-THINGS                           : MORE-PRACTICAL
INTEREST-IN-WORK-WITH-PEOPLE                 : WEAK
INTEREST-IN-NATURE                           : WEAK
INTEREST-IN-MACHINES/ENGINES                 : AVERAGE
INTEREST-IN-ART                              : AVERAGE
INTEREST-IN-SPORTS                           : AVERAGE
THEORETICAL-INTEREST                         : HAS-NOT
                                               HAS-NOT
                                               HAS-NOT
INTEREST-IN-FUTHER-EDUCATION                 : APPRENTICE-TRAINING
INTEREST-IN-APPRENTICESHIP                   : 40
                                               0
                                               0
DESIRED-VOCATION                             : 3517
                                               0
PRECONDITIONS-FOR-CCCUPATION                 : HAS-ONLY-PARTIAL
INCENTIVE-FOR-CHOICE-OF-OCCUPATION           : 4
                                               0
                                               0
INFLUENCE-OF-CHOICE-OF-OCCUPATION            : 1
                                               0
                                               0
VALUE-OF-EMOTIONAL-EXPERIENCE                : AVERAGE
VALUE-OF-PERSONAL-QUALITIES                  : AVERAGE
VALUE-OF-PROPERTY-OF-OBJECTS                 : AVERAGE
CHARACTERISTICS-OF-PUPIL                     : 8
AVERAGE-RESULTS                              : 34
PUPIL-EXCELS-IN-SUBJECT                      : 0
```

```
PUPIL-EXCELS                              : DOES-NOT-EXCEL
                                            DOES-NOT-EXCEL
OUT-OF-SCHOOL-EDUCATION                   : HAS-NO-POSSIBILITY
                                            HAS-NO-POSSIBILITY
AVERAGE-EDUC-LEVEL                        : 4
COMPREHENSION                             : BAD
ATTENTIVENESS                             : AVERAGE
ACQUISITION-OF-KNOWLEDGE                  : BAD
RETENTION-OF-SUBJECT-MATTER               : BAD
MEMORY                                    : MECHANIC
REPRODUCTION-OF-SUBJECT-MATTER            : BAD
CREATIVITY-ORIGINALITY                    : BAD
MANUAL-SKILL                              : AVERAGE-SKILLFUL
ORGANIZATION-ACTIVITY                     : PASSIVE
SOCIABILITY                               : SOCIABLE
BEHAVIOUR                                 : CONSTRUCTIVE
SENSE-OF-ENTHUSIASM                       : AVERAGE
CARE-OF-HEALTH                            : PREDOMINANTLY-LITTLE
CARE-OF-PHYSICAL-TRAINING                 : PREDOMINANTLY-GREAT
RELATION-TO-WORK                          : AVERAGE
DEMONSTRATIONS-OF-SOCIALIST-PATRIOTISM    : 1
                                            4
                                            5
                                            0
                                            0
                                            0
RELATION-TO-COMMON-THINGS                 : 2
RELATION-TO-PERSONAL-THINGS               : 1
SENSE-OF-INTEGRITY-AND-BRAVERY            : AVERAGE
SENSE-OF-JUSTICE                          : AVERAGE
SENSE-OF-DISCIPLINE                       : AVERAGE
HEALTH-OF-FATHER                          : HEALTHY
HEALTH-OF-MOTHER                          : HEALTHY
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HEALTH-OF-BROTHERS-AND-OR-SISTERS        : HEALTHY
                                           HEALTHY
                                           HEALTHY
                                           HEALTHY
DEVELOP-IN-INFANT-AGE                    : 1
DEVELOP-IN-PRE-SCHOOL-AGE                : 2
BAD-HABITS                               : 0
PECULIARITIES                            : 0
BEHAVIOUR                                : 1
NOURISHMENT                              : 1
AGE-YEAR-MONTH                           : 1409
HEIGHT-IN-CENTIMETRES                    : 150
WEIGHT-IN-KILOGRAMMES                    : 43
CIRCUMFERENCE-OF-CHEST                   : 69
DISEASE-OF-EYE                           : 0
LATERALITY-OF-EYE                        : 0
DISEASE-OF-EAR                           : 0
LATERALITY-OF-EAR                        : 0
DISEASES-AND-DEFECTS                     : 0
                                           0
AFTEREFFECTS-OF-DISEASES                 : 1
FUNCT-ABILITY-OF-ORG-ANS-SYST            : 1
PHYSICAL-DEVELOPMENT                     : 1
MENTAL-DEVELOPMENT                       : 1
PROFESSIONAL-ORIENTATION-ABILITY         : 20-1
                                           C-0
CHANGE-OF-WORK-ABILITY                   : 0
FURTHER TEXT IS NOT CONCLUDED
EXCERPT OF ALL DOCUMENTATION
```

DESCRIPTORS

ABSENCE
ABSENCE-UNAPOLOGIZED
ACQUISITION-OF-KNOWLEDGE
ACTIVITY-IN-INFORMAL-GROUPS
AFTEREFFECTS-OF-DISEASES
AGE-YEAR-MONTH
ATTENTIVENESS
ATTENDANCE
AVERAGE-EDUC-LEVEL
AVERAGE-RESULTS
BAD-HABITS
BEHAVIOUR
BIRTH-NUMBER
CARE-OF-HEALTH
CARE-OF-PHYSICAL-TRAINING
CATEGORY-OF- FLAT
CHANGE-OF-WORK-ABILITY
CHAR-OF-CLOTHES
CHARACTERISTICS-OF-PUPIL
CIRCUMFERENCE-OF-CHEST
CLASS-COLLECTIVE
COMPREHENSION
CREATIVITY-ORIGINALITY
DEMONSTRATIONS-OF-SOCIALIST-PATRIOTISM
DEVELOP-IN-INFANT-AGE
DEVELOP-IN-PRE-SCHOOL-AGE
DISEASES-AND-DEFFECTS
DISEASE-OF-EAR
DISEASE-OF-EYE
EDUCATION-OF-FATHER
EDUCATION-OF-MOTHER
EDUC-REGIME
EMPLOYMENT-CODE-OF-FATHER
EMPLOYMENT-CODE-OF-MOTHER
EMPLOYMENT-OF-FATHER
EMPLOYMENT-OF-MATHER
FLAT-SITUATED
FUNCT-ABILITY-OF-ORG-AND-SYST
HEALTH-OF-BROTHERS-AND-OR-SISTERS
HEALTH-OF-FATHER
HEALTH-OF-MOTHER
HEIGHT-IN-CENTIMETRES
INCENTIVE-FOR-CHOICE-OF-OCCUPATION
INFLUENCE-OF-CHOICE-OF-OCCUPATION
INTEREST-IN-ART
INTEREST-IN-APPRENTICESHIP
INTEREST-IN-FURTHER-EDUCATION
INTEREST-IN-MACHINES/ENGINES
INTEREST-IN-NATURE
INTEREST-IN-SPORTS
INTEREST-IN-THINGS
INTEREST-IN-WORK-WITH-PEOPLE
LATERALITY-OF-EAR
LATERALITY-OF-EYE
MANUAL-SKILL
MEMORY
MENTAL-DEVELOPMENT
MOTHER-TONGUE
MUNICIPAL-RESIDENCE-CODE
MUNICIPAL-SCHOOL-CODE
NATIONALITY
NOURISHMENT
NUMBER-OF-FAMILY-MEMBERS
NUMBER-OF-ROOMS
ORGANIZATION-ACTIVITY

ASPECTS WITHOUT DESCRIPTORS:
EXCERPTION CONCLUDED

OUT-OF-SCHOOL-EDUCATION
PECULIARITIES -
PHYSICAL-DEVELOPMENT
PRECONDITIONS-FOR-OCCUPATION
PROFESSIONAL-ORIENTATION-ABILITY
PUPIL-EXCELS
PUPIL-EXCELS-IN-SUBJECT
PUPIL-LIVES
RELATION-TO-COMMON-THINGS
RELATION-TO-PERSONAL-THINGS
RELATION-TO-WORK
RELATION-TO-BROTHERS-AND-OR-SISTERS
REPRODUCTION-OF-SUBJECT-MATTER
RETENTION-OF-SUBJECT-MATTER
SCHOOL-CODE
SCHOOL-YEAR
SENSE-OF-DISCIPLINE
SENSE-OF-ENTHUSIASM
SENSE-OF-INTEGRITY-AND-BRAVERY
SENSE-OF-JUSTICE
SEX

SOCIABILITY
SUBJECTS-IN-HOUSE
SYSTEMATIC-HELP-WITH-LEARNING
THEORETICAL-INTEREST
UNSYSTEMATIC-HELP-WITH-LEARNING
VALUE-OF-EMOTIONAL-EXPERIENCES
VALUE-OF-PERSONAL-QUALITIES
VALUE-OF-PROPERTY-OF-OBJECTS
WEIGHT-IN-KILOGRAMMES
DESIRED VOCATION
WORK-CONDITIONS
YEAR-OF-ATTENDANCE

UTILIZATION OF INFORMATION ON THE PUPIL AND HIS MENTAL MATURING FOR THE PROCESS OF EDUCATION AND INSTRUCTION

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Introduction

The present development and growing tempo of contemporary scientific and technical revolution requires also more intense increase in the speed and extended spheres of obtaining scientific information in all the specialised sciences all around the world. Consequently, it is not sufficient anymore either in the field of pedagogy, as a science on education and instruction, to rely only upon the so-called pedagogical information, which is closely connected with this scientific discipline; we are concerned namely with the complex view of the tasks ensuing from the education of the young generation, from the life-long education of the working people, from the development of the educational systems, and the like. If this is the matter of scientific investigation and constant improvement of the quality of the process of education and instruction of the human being, then the so-called socio-economic information on the ensurance and results of this process includes undoubtedly also biological and psychological factors that, in our opinion, should be even the basis of the individual approach to pupils in schools, to which today is paid great attention in the educational systems of the socialist countries. We will deal in detail with such a factor consisting in a certain degree of achieved mental maturity of the pupil.

Mental maturing of the pupil in the information system in the field of education

The basic changes, which are being implemented nowadays in the Czechoslovak education include also the objective fact that the automated information system will become the axis of the whole management also in this sphere of our life. Until now the characteristics of information on the pupil and characteristics of the information systems in education consisted basically in recording data on past events. But nowadays we already consider automated information systems, with the aid of which we will be elaborating the optimum variants of the possible future events for the real decision-making regarding our future, i.e. the automated information system /AIS/ will be complemented by the automated decision making systems /ASR/, so that by their integration we could create complex automated management system /ASŘ/ in the field of education at the most varied levels. Within its framework it is precisely the utilization of information on the pupil, which can enhance the efficiency of the whole pedagogical process, and which will be undoubtedly of substantial importance for its optimum implementation. Of course, it is obvious that the information on the pupil has to be complemented also with the information on the environment in which the pedagogical process takes place, and with the information on the environment surrounding, supplementing and interacting with this process. However, we are unable to pay attention here to all significant problems of socio-economic information in the field of education, and thus I will confine myself only to the information on the pupil, that is only to the biological and psychological factor, which I personally regard to be the most important component of his personality, to the level of his mental maturity.

If we acknowledge that the changing and ontogenetically developing psyche of the pupil are psychic phenomena necessarily belonging to his personality, developing particularly by the incorporation of the pupil into the working teams of the class and into the society, which he is influenced by, then information science as a scientific discipline cannot disregard this fact. At the same time, it has already been proved scientifically that the mental time is the decisive factor, concerning the level of the mental maturity of every human individual. Mental time is used as an objective internal time of human beings by the nerve structures of the CNS /central nervous system/ of living human organisms for measuring and regulating mental motions, mediating man's thinking /Kahuda, 1976/.

Since Ivan Petrovich Pavlov's times it has been known that every human being, as a living creature with his specific autoreactive and autoregulative system whose most inherent and typical feature resides in his own internal activity, he has also his mental time and his own specifically set "mental clock", the "working" of which is influenced by his mental abilities and "the pendulum" of which can be placed in the brain of the human being /Holubář, 1961/. The mental maturing of the pupil is, at the same time, defined as a process of evolutionary changes in rational abilities of the young person, to react promptly and, in accordance with the general knowledge, correctly to the given stimuli of mental reactions at a certain age of his mental and intellectual development /Kahuda, 1972/. Then the special complex of these abilities of the individual to react to the mental stimuli promptly and correctly, i.e. those abilities which help the human being solve new problems, with the help of thinking, and the fact that he is able to learn abstract matters, is often described as man's intelligence /Pietrasinski, 1964/. To find the method of measuring man's mental maturity thus means to contribute also to the knowledge of what we have called the intelligence of the human being. Yet the two notions are not identical. While at present there does not exist a uniform theory of intelligence, which would satisfy all scholars, the definition of the mental maturing enables the unambiguous operationalization. Psychological literature contains many definitions of "intelligence"; but none of them is fully suitable, since they do not determine which of the so far known relevant rational abilities belong under the term intelligence, what is their inner structure and how their development proceeds. Many scholars, among them also our pedagogue Professor O. Chlup, even reject the term intelligence as such, and they conclude that it is sufficient for us to evaluate the individual mental functions, as for instance memory, attentiveness, logical activity, imagination, emotional receptiveness, and the like /Stejskal, 1934/. But the intricate tangle of these functions cannot be studied and measured separately, without their interrelationships, as all of them are interlocked and mutually influenced. Consequently, I have confined myself only to those mental functions which I regard to be the relevant for the mental maturing of the young person: logical correctness and promptness of his mental reactions.

We obtain the indicators of these two mental functions, i.e. the physical time and the quantitatively evaluated number of successfully solved tasks in mental activities, by means of a test of mental maturity, which with regard to the consistency with the hitherto theories of measurements of man's mental abilities is often referred to as the intelligence test.

Formalization and structure of the mental time

Time is indisputably one of the fundamental quantities of physics, and that is why we call it also physical time. It does not exist by itself, but it is the expression of changes of the given material structure, which we observe in a certain succession. If these changes do not exist, time will intermit, as space and time do not have individual objective existence /Čížek, 1966/. If there is no material structure, there will not exist any notion of what the time is. Every body is thus situated not only in space with its structure, but also in time; that is why it is a space - time object. Its time situation, in which we notice the changes of its structure, is the motion of the body or the changes of behaviour of its particles. The physical time, the uniform duration of which is only conceptional for every human being, is in spite of that independent from the life of the individual, for instance from his age. But every individual still develops in his time, every one in a different way, as for every one the beginning and the end of his inner time are different with respect to any kind of activity, any kind of change. Thus his inner time should change together with man's age.

The mental time is such an inner time of human beings. As we have already mentioned, it is used by the nerve structures of the CNS of the living human organisms for the measurement and regulation of the mental motions, mediating thinking. The objective existence of the mental time is connected with the existence of man's sense of time, i.e. our sixth sense, with the aid of which we perceive the flow of time, act consciously and inconsciously in certain regular rhythms, realise the time aspect of all sensual perceptions, simply we are able to measure our time, by the own means of the organism, and thus we spend our whole life /Holubář, 1961/. We do not have only five senses, with which we have operated predominantly until now, but also the sixth sense - man's sense of time. This sense is developed in the ontogenesis, its beginning can be observed approximately at the age of four, and it reaches the adults' perfection at the age of 13-14 /Binet, Simon, 1916/. It is only natural, that if we do not care about these individual time rhythms, if we do not take them into consideration, or if we impair them intentionally, we impair also the organism, we destroy it and produce abnormal situations with regard to nerves, as various neuroses, stresses, exhausting fatigues, and the like. If, for instance, our teachers do not know and do not take into account the mental tempo, i.e. the mental time of the individual pupils, they become potential enemies of the pupils, harm them especially by classification, resulting in the pupils' failures. Since relatively successful pupils can be found also among those, who work with the average or slower tempo of the physical time, as it has been proved by research.

The brain organism of the pupils mediating mental motions within the process of their thinking, has also its mental time, which is different from the biological time. Its construction is /Kahuda, 1972/

$$MT = \text{const} \times \frac{PT}{B} \qquad /1/$$

where the range factor $B = E_p$ is identified with indicators of the potential /psychical/ energy exerted on the achievement of the necessary direction while fulfilling the mental tasks and PT is the physical time, by which the time necessary for the fulfillment of the above tasks is measured, has been proved correct by numerous experiments and it is already accepted as self-evident nowadays. Factors that formalize this space of time are acquired by the before-mentioned test of mental maturity, which is of a Czech provenience and it has excellent characteristics, mostly as far as its discrimination capacity for the age span from 10 to 70 years of age is concerned. Its characteristic feature is the individually variable physical time PT, which is being measured by a stopwatch, with the exactness of one quarter of a minute, which measures separately for every single individual /respondent/ his individual latent time of the decision making necessary for the answering of the tasks of the test. The results of measuring have proved unambiguously that the time differences of the psychical reactions of the human being are particularly perceptible precisely with the mental time characterizing much more expressively the human personality that the physical time, which is measured in the laboratory /Kahuda, 1972/.

In the relation /1/, i.e. in the construction of the mental time, the derived measurable variables MT and E_p are thus the fundamental quantities, which express everything what is substantial for the mental maturing of the human being, i.e. none of them is redundant information on man's personality; their proceedings as far as the age is concerned is illustrated on Figure 1.

Fig. 1 Dependence of standard changes of scalar quantities E_p, MT upon the age of tested respondents

From our numerous researches it follows that the reliable answer, regarding man's mental abilities for intellectual activities, will be obtained with reliability exceeding 95% already when we ascertain only his mental time. Since all the elements of man's personality are projected into the mental time, also his mental maturity is projected therein. Today, it is for instance scientifically proved that the personality becomes psychically and socially mature on average at the age of 30 /Příhoda, 1967/; in connection with this fact, also our finding is in full correspondence with the fact that the mental time becomes mature on average at the age of 30, /see Fig. 1/ when it reaches qualitatively the lowest values. Thus Fig. 1 represents the dialectical process of the growth with the monotonously increasing and decreasing trend of the essential factors of man's mental maturing, and shows something unknown until recently, namely that the maximum of the curve E_p = B is reached at the age of 21 years, i.e. more than ten years sooner than the minimum of the curve of MT which attests to the remarkable capability of the psychical processes to become more economical. Consequently, the function of the brain consists also in supervising the economy of the human psyche.

Aspects of development of mental maturing of the pupil

We have already mentioned that if until now the character of information on the pupil consisted basically in recording data on past events in the process of his education and instruction, we intend now, within the framework of the newly conceived information system of the "unified registration of pupils" /URP/, the author of which is our host - the Institute of Educational Information at the Ministry of Education of the Slovak Socialist Republic, to elaborate optimum variants of the possible future events, i.e. variants of the possible and expected development of the personality of every individual pupil. In this connection it is necessary to draw attention to the significant relationship of the phenomena referred to as the phenomena of "growth" with regard to the parameter of time. The growth is one of the fundamental characteristics of every living substance; the parameter of time assigned to it is, as a rule, the chronological /calendar/ age of the individual. Growth, characterised by the quantitative increase or decrease of the living substance, is unseparably connected with the age differentiation of its functions, i.e. with its qualitative differentiation, which we call "development". Generalised aspects and elements of heterogeneous processes of the time motion reflect thus development.

But the motion differs from development, these two concepts being not equivalent, even though there exists a very profound liaison between them, based on the fact that the motion and development represent first of all various changes of objects. But those are not any changes that create the process of development. Motion - as it was commented by F. Engels - is the change as such. But only certain distinctive changes constitute development. Only when a certain prevailing trend exists in those changes of motion, i.e. the orientation or the asymmetry of the direction, only then these changes constitute development /Gott, 1972/. Thus we define the development as the complex of changes, in which a certain direction prevails, a certain direction towards the given objective, i.e. there exists a certain asymmetry, as expressed in Fig. 1. It is necessary to differ just the same the concepts "growth" and "development". Growth proceeds always regularly according to a certain plan, the graphic figure of which are standard /based on averages/, the so-called S-shaped growth curves.

But the growth of the organism of the human being, i.e. of his individual parts and organs and the whole body, does not proceed evenly either as to time or place, but recurrently, periodically, in such a way that the periods of time of quicker growth alternate with the periods of slower growth, and, at the same time, the inherited growth quality is always shaped by influences of the environment. Consequently, the regular growth curves together with the parameter of time inform us only on the position of the individual in the population, from which they were derived, if we compare his quantitative individual growth factors with the average factors of the age subpopulation corresponding with him; but they cannot inform us if the growth of the given individual /human being/ proceeds normally. That is why we call these growth curves with the parameter of time, according to the studies of man's somatotype, the "pseudo-growth curves". Studies concerning the growth of height and weight, as man's anthropological features have shown that they are still unsuitably considered in relation to the age, as every child does not have to grow with the same speed and it can reach more quickly or slowly the higher stages of growth. But, unfortunately, we do not have until now "correct growth curves" and they have not been yielded by long-term studies of the individuals' growth - as ascertained Professor at Charles University, František Blažek, M.D. /Blažek, 1971/.

It was precisely in the investigation of the growth of psychical factors that I proved that the dependence upon the parameter of age provided us only with the first information, which we could call "false", and that the operational system, not the age one is the fully expressive, i.e. essential system of the human psyche /Kahuda, 1972/. Our hitherto practice to follow the phenomena of growth in relation with the parameter of time does not provide us with correct information, which is of fundamental importance for our considerations. Figure 1 offers only the first information on the course of curves of the energetic factor E_p and the factor of time MT in man's brain - that is the false information, because the system with the parameter of age is not yet a fully expressive system. Figure 2, in which the course of the both measured factors is schematically illustrated, offers correct information regarding the course of these changes in the brain of a human being. It is obvious from this Figure that the operational unit $\aleph = 1$ is the same and common to all the age subpopulations, so that the older individual having an objectively larger capacity of the reactive potential has to exert less mental energy for one unit of the mental operation, but, at the same time, he reaches greater reactive speed than the younger individual. That corresponds fully also with the experimental results found in professional literature, in which only curves with the operationally growing trend appear undialectically /Ellner, 1959/.

Fig. 2 Schematic course of potential factors in the objectively real operational field of mental reactions

This operational system enables to move from the distinct age macrostructure to the operational macrostructure of individuals within the society or within some social group, what brings along /in some cases after the application of a logarithmic operational scale/ further precision and thus also greater exactness when considering and examining various types of the human personality. The energetic factors E_p represent now that energy of growth, the value of which changes throughout the whole life of a man, and it can be used for the measurement of his real mental age, because, as we have pointed out, it is not sufficient to use the units of physical time for measuring man's biological and mental age. The mental age of the human being thus does not correspond with his physical age, which is measured as his "age" with the units of the physical time /years, months, days/.

Conclusion

The discovery of the mental time will have far-reaching consequences in all social spheres, which work with man's personality, first of all in pedagogy, further in the theory of learning and in the counselling services; as it measures the mental motions within the nervous structure of every single individual, as his own, individually changeable inner time. It represents one of the most significant pieces of information on the pupil, on his mental maturing important for the process of education and instruction. Its full utilisation in the new information and decision-making system in the field of education can bring about the optimum situation in the automated management of the educational process, not only in schools and in educational facilities, particularly in vocational guidance, but also in the adult education of workers. It is a function of the fundamentally measurable physical time, with its exact theory of the laboratory measurements of the objective material motions and changes of occurences, and as such it is a measurable quantity.

The substance of the problem to the effect that curves which inform us on the dependence of human factors in the life of a man are false curves, which provide us only with the first information, lies in the fact that the age is not the creation of human organism. It was mechanically assigned to it from the inanimate physical world. But the mental operation undoubtedly belongs among the creations of a man. The same applies to the mental time, which as the indicator of the process of thinking is the creation of nerve cells and the until now unknown material substrate of the sense of time in the human organism. The conditioned reflexes of the living animals to time, discovered and experimentally proved by Ivan Petrovich Pavlov, would be, for instance, practically inexplicable without the anticipated existence of a certain time-measuring mechanism in the living organism. But the disclosure of regularities of perception of time and the problem of the sense of time as such are,of course, still rather far from being solved /Holubář, 1961/, but the objectively real, i.e. from the human will independent existence of the sense of time, and especially of the mental time of the human being is indisputable today. And that is why I am very satisfied that the uniform registration of pupils of primary and secondary schools /URP/, envisages the investigation and registration of the mental maturity of individuals, within the investigation of their social maturity, and that in the successful opponency of the research task concerning automated management systems in the field of education there was carried out the investigation and registration of mental maturity quotients of secondary-schools graduates and university students, including the mental time, and that all this was also positively accepted and approved. The road towards modernization, and more scientific approach to the process of education and instruction was embarked upon in this manner.

In the history of our education and in the traditions of its development in the Slovak Socialist Republic it will be once undoubtedly positively evaluated that the ideas of this kind were voiced for the first time in front of the international forum just here - in Bratislava. If also EDICO-2 and its scientific and international sponsor UNESCO-BIE show interest in these new, truly innovative views of the objective information on the personality of the pupil and man as such, especially as far as his mental time is concerned, which is quantitatively measurable and internationally comparable, it would constitute, in my opinion, a progressive act in the field of successfully developing international cooperation concerning the information systems in the field of "education and instruction", as it is being represented competently by the numerous delegations at the EDICO-2 Colloquium.

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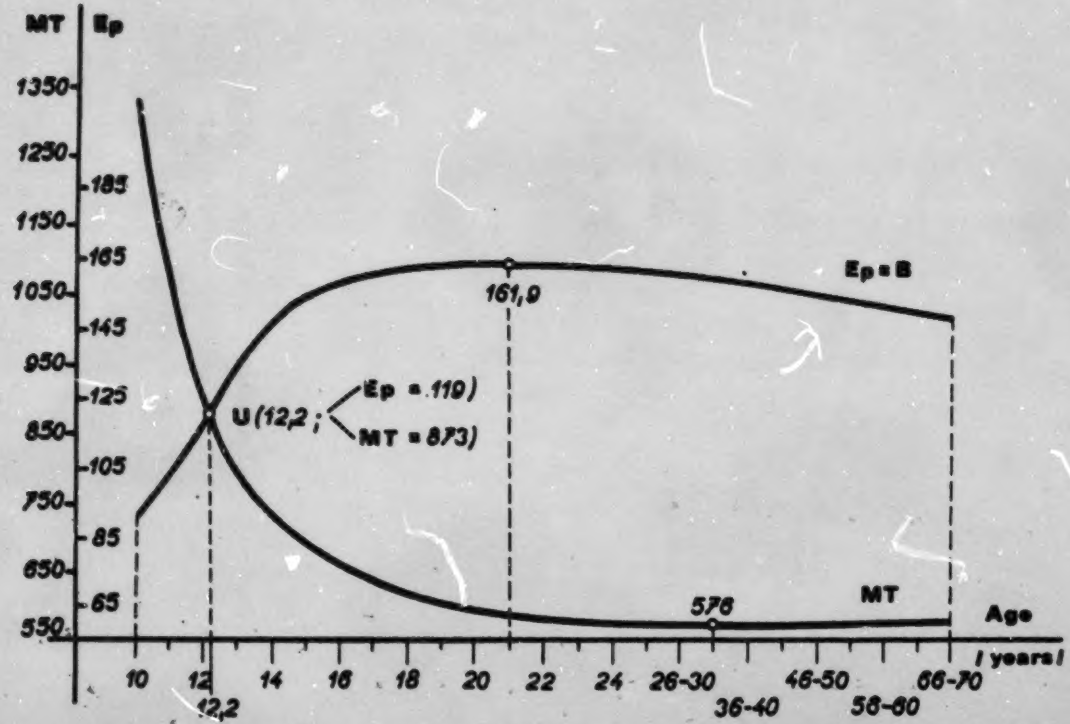
FIG. 1.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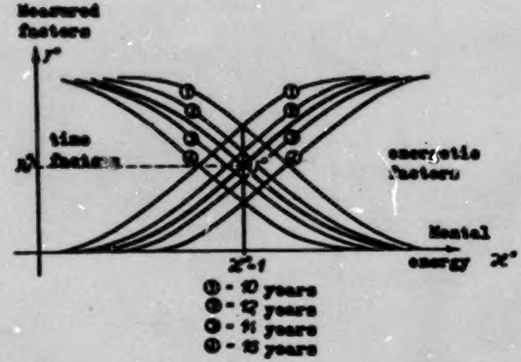

Figure 2. Schematic curve of potential factors in an objectively realistic performance field of mental reactions.

APPLICATION POSSIBILITIES OF INFORMATION ON MENTAL TIME IN THE EDUCATION OF THE CHILD

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With the development of socialism, the impact of society on the personality of pupils or students has been steadily increasing. Educational facilities, socializing institutions and Marxist pedagogy pursue demanding objectives not only as regards the amount of acquired knowledge and the improvement of teaching methods, but they strive primarily at molding the child's personality in the spirit of the socialist ideals and ensuring an integral approach involving all the factors taking part in the education - i.e. family, school, organizations of the Socialist Union of Youth, mass media, arts, out-of-school activities, etc.

In thir efforts for harmonising all the educational influences and, rather than influencing only the child's behaviour and partial features of its personality, putting solid foundations to personality structure, the pedagogy and educational policy are obliged to adopt new categories, concepts and instruments of management, as the implementation of new tasks and approaches requires the application of adequate means.

One of the modern tools for the management of educational process in entire age groups, fields of study, generations of pupils and students, is represented by the automated system of management; the work connected with its introduction gives rise to qualitatively new problems and tasks, providing impetus for the development of scientific disciplines involved in its introduction, namely pedagogy, sociology, and psychology, but also medicine and statistics.

The automated system of management requires a qualitatively new type of information on pupils and students as well as new methods for its collection. I believe that the specificity of information for the automated system of management consists in the fact that it must give detailed account both of the individual and his developmental processes and of social entities - class, school, study branch, faculty, etc.

Owing to the necessity of making a selection out of a great potential quantity of data describing an individual, it is inevitable to pick up those development processes and respective information concerning them that are substantial and characteristic. Investigations carried out by the Institute for Social Research of Youth and Vocational Guidance of the Pedagogical Faculty of Charles University demonstrated that the processes of the above type include the mental and social maturation of children and young people.

The mental maturation of a child takes place in a dialectic unity with his life environment consisting of three, relatively independent, but nevertheless dialectically interdependent components - biological, mental and social spheres, making up the unity of the individual's living conditions.

The biological sphere includes everything that acts upon man's senses, everything that affects his first signal system and enters into material and energetic interactions with. The biological sphere is limited in time and space, and involves only a portion of the surrounding environment, in accordance with the biological system of the individual.

The mental sphere is constituted by a set of stimuli acting upon the psychic aspect of one's personality, stimulating the development of mental capacities and functioning of mental operations.

The individual's social sphere corresponds to a structured social reality of individuals and groups with whom the individual maintains relationships as well as individuals, groups and institutions between whom and the subject there proceed one-way or two-way behavioural and social processes in which he takes an active or a passive part.

Mental and social spheres are based on the social structure, its fundamental components being the character of social system and the class origin. Other categories - nationality, ethnic group, locality, family, etc. enrich and differentiate this general base of the above spheres. The living environment of any individual includes, in addition to the general and common base, also certain specific elements which make up its individuality. Stimuli provided by the differentiated mental and social spheres account for the individuality of the process of mental maturation that, though obeying general laws, has a unique character. Identical factors of the living environment result in similarities, and different factors in differences in the process of mental maturation.

The above questions were dealt with in the ivestigation into social aspects of mental maturation that have fully confirmed the social conditioning of this process. The more significant is the factor of mental and social sphere, the more substantially it is projected into the process of mental maturation. It was demonstrated that the most significant factor is that of family - its social, cultural and educational level.

In the analysis of empirical data on 2100 children in the age group from 11 to 15 years I came to the conclusion that the process of mental maturation involves, in addition to its space dimension - that of a so-called mental field - also that of the so-called mental time.

The mental maturation of any individual takes place in the individual's mental time; its validity is again more general in the case the factors of mental field are identical.

The family with its social, cultural and educational level constitutes such an important factor of the child's mental field that the mental maturation of the child takes a completely different course in those children whose parents are university graduates than in those whose parents received an elementary education.

It would be a simplification to state that one group is retarded, if its mental maturation differs from the other group. The fact is that the mental maturation of each of the given group takes place in its own mental time.

The finding that the mental maturation of children depends on the class and socio-professional status of parents has stimulating implications for the pedagogy and school system. The fact that groups of children have their own mental time must be taken into account in the administration of the teaching process and in education itself.

Children whose family creates a living environment with a limited amount of stimuli, develop at first more slowly and their period of mental maturation is, in comparison to children of university-educated parents, delayed by one year.

While the mental development of children whose maturation took place in favourable conditions is slowing down since the age of 13 years, those children whose mental and social spheres were poorer in stimuli, begin suddenly to develop rapidly under the impact of the society which, at this age, contributes with a significant share in saturating their mental and social spheres with stimuli.

This period is of crucial importance for the development of mental capacities and for the shaping the personality. In the course of two years the child is able to absorb directly stimuli provided by the society, without the mediating role of family, and is ready to subject itself to the impact of the society.

We may assume that although specific reasons vary in any given society, and variable is also the mental time and the dynamic period in which rapid development of mental abilities begins, in a given society there is bound to exist an age at which, for majority of children, this dynamic period of crucial importance for the educational development and stepping over educational barriers starts, depending on the stimulation provided by the society's living environment.

In addition to the mental time, discovered by Professor Kahuda, as a dimension of psychic responses reflecting an individual's abilities, there exists also the mental time as a dimension of the process of mental maturation.

The mental time characterizes also certain social groups and makes it possible to gain insight into the mental maturation of entire groups on the one hand, and to intervene into this process with the aim of optimizing it, on the other hand. It may thus represent a significant tool in the administration of education, of continuing democratization and class approach to education.

Mental time, as a dimension of psychic response of an individual and of mental maturation of social groups, gives account of individuals, social conditioning of their performance at school, and makes possible qualified interventions into pedagogical and social processes.

SIGNIFICANCE OF INFORMATION ON THE PUPIL FOR MANAGING THE EDUCATIONAL PROCESS AT ELEMENTARY SCHOOL

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The need for improving methods of educational influences, projected into the need for improving the management of educational process, makes the theory of education focus its attention, more so than in the past, on discovering laws governing the process of shaping the personality of elementary school pupils and assist, in a more efficient manner, in improving the level of management of the process of education.

The managerial activity of the teacher consists primarily in the adaptation and taking into account of factors that represent the conditions of education, in the organization of pupils' activities, in the stimulation of their moral and social activity towards putting up such psychic structures and personality features that will ensure the self-regulation of their behaviour according to the adopted moral ideal.

Effectiveness and, consequently, also efficiency of the process of education depends on the extent to which we succeed in establishing dialectic interrelationships between determinants of educational process, educational objectives and educational means. The optimization of the above relationships constitutes both prerequisite and criterion for the management of the process of education.

An adequate amount of information concerning the process of education and its determinants may be thus considered as one of essential prerequisites for strengthening the formative function of the contemporary school. Qualified information concerning the outcomes of educational process that may be obtained through establishing the level of moral and social maturity of pupils, and the information concerning determinants of this level, enable the teacher to specify next objectives of education, to utilize optimal means of education and to evaluate the pupils in an objective and pedagogically justified manner. At the elementary level of management of the process of education, effected within the frame of reference "teacher-pupil" /class/, the teacher is both the producer and the user of necessary information. A sufficient quantity of qualified information appears as one of basic prerequisites for the management of pedagogical processes as well as for the process of moral influence /i.e. educational process/. In this context, the idea expressed by the outstanding Soviet pedagogue A. S. Makarenko, who emphasized that the teacher's knowledge of the pupil is a prerequisite, not an objective, that the pupil is not the object of study for the teacher, but primarily the object of educational influence, purposeful projection of personality, retains still its topicality.

From the viewpoint of needs of our present-day school practice, teaching personnel should be widely induced to consider three indicators through which it may establish the moral and social level of the pupils' personalities, as well as determinants of this level at the given stage of school system. The need for outlining precise and concrete criteria of moral and social activity of pupils and for understanding the significance of factors functioning as preconditions of moral and social level of their personalities, entails the necessity of study and practical application of scientific findings established in the respective scientific disciplines of psychology, sociology, ethics and other human sciences - not, however, by their mechanical adoption, but by their creative application from the viewpoint of pedagogy as science and from that of specific needs of educational practice at the given type and level of school.

In order to secure and adequate amount of information necessary for the management of the process of moral shaping of the pupil's personality it is necessary to solve consequently also questions related to the production of qualified information as a component of methods for acquiring knowledge on pupils. We have to work out such a system of methods and techniques for learning about the pupil's personality that would make it possible to learn, as objectively as possible, conditions necessary for the management of educational process, and that simultaneously could be mastered by teachers as to technique and time. We believe that a solution might be found in the adaptation of cognitive methods and techniques from respective scientific disciplines of psychology and sociology. This is another problem area that will have to be approached in connection with the requirement for improving the management of the process of education at its elementary level. Only appropriate elaboration of methods used by the teachers to learn about the pupils, projected into the perception of outcomes of the educational process and of determinants of this process, will lead the teachers to evaluate duly the significance of information for the management of the process of education.

In this context, the use of appropriate tests appears to offer promising results. By means of these tests the teachers might gain knowledge on moral and social maturity of their pupils and obtain qualified information for the needs of management no only at the elementary level.

Reserves still existing in the area of acquiring knowledge on elementary school pupils and of producing desirable information in the present-day school practice are, in our opinion, due also to an underestimation of the pedagogical records. The existing records are one-sidedly oriented towards the outcomes of the teaching process, and do not sufficiently reflect the process of education in its totality. School records concerning the elementary school pupils provide information on pupils' performance at school, and inform but inadequately on the determinants of the existing situation and, in this way, they do not provide data necessary for forecasting. They offer a static rather than dynamic image of the pupil's personality.

A significant contribution towards the collection and production of information for the needs of managing the educational process will be made after the introduction, into the school practice, of a draft proposal for unified registration of pupils. This draft proposal is expected, inter alia, to affect positively, by means of the Pupil's Registration Sheet, the production and collection of information necessary for the management of educational process at the elementary level, not only by mediation, but also in a more immediate manner, by helping the teachers to gain deeper knowledge of the effects of educational activity as such. The work associated with filling out the sheets will induce the teachers, namely those in charge of individual classes, to take note also of the factors functioning as determinants of pedagogical processes and will thus have indirect positive implications for the level at which this process is managed. The introduction of the above-mentioned draft proposal for the unified registration of pupils will, however, require the implementation of appropriate methodical and organizational measures.

A STATISTICAL MODEL FOR ESTABLISHING PERFORMANCE INDICATORS OF THE SCHOOL SYSTEM

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The present colloquium aims, among other things, at discussing the improvement in management, planning and forecasting in the field of education. In my understanding, this objective corresponds to the production of an adequate amount of information needed by managing bodies in order to improve planning and forecasting activity particularly with respect to the training of professionally skilled persons for the needs of our national economy.

In our country much has already been done in this area, as may be demonstrated by the Unified Pupil Registration, presently being subject to processing, with the use of the GOLEM system, at the Bratislava University Computing Centre of Mlynská dolina. According to this programme, approximately 120 different data on one pupil should be collected per year, the target information being limited to 500 thousand characters. The possibility of obtaining relatively easily such a considerable amount of data should, however, induce research workers in the area of pedagogy, psychology, sociology as well as those in the management and planning of the system of education, to make full use of them in their professional and research activity.

All the above scientific disciplines share one common subject of study - that of the population of school-going age, or the portion of the population over 15 years of age receiving the professional training at secondary vocational and university-level schools. Out of a number of characters peculiar to this population set, of interest for the planning activity are those which will aid to establish the total numbers of students in individual years, number of newly admitted students as well as that of school-leavers, all of these representing the most significant indicators of the performance of school system.

The establishment of the above mentioned, seemingly quite simple indicators, may, however, in the case of long-term planning represent a strenuous calculating work, if we consider the relatively marked horizontal and vertical diversity of our advanced education system and the necessity for the long-term planning to take into account the requirements of national economy on the training of necessary quantity of professionally skilled persons.

The estimation of tendencies in the area of the number of pupils and students, effected by means of common applications such as the regression analysis, does not make it possible to reflect adequately individual feedbacks between the number of students at individual levels and types of schools on the one hand, and that of students engaged at individual branches of study at the schools of university-level. Moreover, these methods do not allow to perceive in detail organic links characterising the mobility of students between individual cycles, such as the distribution of pupils at the age of 15 years into schools of the 2nd cycle, eventually the selection of secondary school leavers for university study.

The structure of the sets of pupils constitutes a very important factor in both short-term and long-term planning. It is not, however, sufficient to reveal regularities governing the advancement of pupils up through the education system, as it disregards the time factor in combination with the qualitative structure of the given set. The most significant requirement in observing the development processes of the population and thus also that of the pupils set is to distinguish the development over time from the stationary state of the population. The operator of the projection helps to represent the process of discontinuation of certain states in the forthcoming periods on the basis of states observed in the past periods and to formulate conclusions for the managerial authorities.

The above model technique may be used also to examine the education system. Any education system is characterized by the fact that its basic element - the pupil - passes over the schooling period gradually through certain "states" identical with individual components of the system of education /classes, types of schools, cycles of the school system/, and in these individual phases may leave the school, repeat the grade, etc. Basic types of indicators proper to models for establishing planned indicators of the school system performance include, in addition to "state" indicators, also the so-called "flow" indicators. While the state indicators only inform on the situation characteristic for the set of pupils in the given period /e.g. the number of 2nd grade pupils/, flow indicators inform similarly on the state characteristic for the given set in the past period /e.g., out of the total number of 2nd grade pupils, a portion passed from the 1st grade and the rest repeats the 2nd grade/, or even in the entire series of past periods.

The course of one's studies for an individual appears to result from a number of random causes; but in observing a set of pupils represented by the age group of the one year span in the territory of the same country, we may establish that this set is over time subject to identical changes resulting, for example, from natural demographic factors /morbidity, mortality rate/ as well as from changes in the level of educational process, changing only slowly and reflected in the drop-out ratio. The education process of the given set thus depends upon the situations preceding it and its evolution may be therefore modelled according to the previous periods.

For this purpose it is convenient to use Markov processes consisting in the prolongation of existing trends in combination with the necessary structure and signaling the probable evolution of the system provided the existing trends will continue.

The insight into internal relationships of the educational process may not be gained by means of conventional computing technique of the population analysis based on the state indicators; it must be complemented by flow indicators, the changes in which must be recorded by means of matrix number.

1. Identification and relationships between statistical indicators in the model

In the model illustrating the course of the education process two types of indicators are used, namely:

1. state indicators, such as:

S_i^{t-1} number of pupils in grade i in the period $t-1$ $(i=1,\dots n)$,

S_j^{t} number of pupils in grade j in the period t $(j=1,\dots n)$, where n is the number of grades;

2. flow indicators /designated as "a"/, reflecting changes having occurred in state indicators between the periods t-1 and t, representing:

a_{ij}^{t-1} number of pupils passing, between the periods $t-1$ and t, from grade i to grade j /same meaning as above/.

With respect to specific instance of the model we shall distinguish individual cases of flow indicators:

a_{ij}^{t-1} is the number of students passing from lower grade i to higher grade j between the moments $t-1$ and t $(i \neq j)$,

a_{ii}^{t-1} is the number of pupils repeating the same grade in the period $t-1$ and t; $(i=j)$,

a_{iv}^{t-1} is the number of pupils having left the school in the course of t-1,

a_{jp}^{t} is the number of pupils newly enrolled to grade j in the period t.

The above indicators might be arranged into the following table of pupils passing to the next grade, with the matrix **A** /in square brackets/:

Tab. I Table of students passing to the higher grade between two time periods

$i \backslash j$	1	2	...	j	...	n	$\sum^{j}$
1	a_{11}	a_{12}	...	a_{1j}	...	a_{1n}	A_1^{t-1}
2	a_{21}	a_{22}	...	a_{2j}	...	a_{2n}	A_2^{t-1}
.				.			.
.				.			.
.				.			.
i	.	.		a_{ij}		.	A_i^{t-1}
.				.			.
.				.			.
.				.			.
n	a_{n1}	a_{n2}	...	a_{nj}	...	a_{nn}	A_n^{t-1}
$\sum^{i}$	A_1^{t}	A_2^{t}	...	A_j^{t}	...	A_n^{t}	

Elements located on the main diagonal /a_{11}, a_{22}, ... a_{nn}/ describe pupils repeating the grade. The upper diagonal

$/a_{12}, a_{23}, \ldots a_{n-1,\, n}/$ represents the number of pupils passing from the lower to the higher grade.

The number of 1st grade pupils in the period t-1 having remained at school also in the period t is established as the sum of the first line:

$$\sum_{j=1}^{n} a_{1j}^{t-1} = A_1^{t-1} \qquad /1/$$

If the total is used, in its broken down form, also for other grades, we obtain totals for grades 1 through n in the period t-1:

$$\begin{aligned} a_{11} + a_{12} + \ldots + a_{1n} &= A_1^{t-1} \\ a_{21} + a_{22} + \ldots + a_{2n} &= A_2^{t-1} \qquad /2/ \\ \ldots\ldots\ldots\ldots\ldots\ldots & \\ a_{n1} + a_{n2} + \ldots + a_{nn} &= A_n^{t-1} \end{aligned}$$

which may be concisely put down as follows:

$$\sum_{j=1}^{n} a_{ij} = A_i^{t-1} \quad (\text{for } i=1,2,\ldots n) \qquad /3/$$

The passage of pupils into grade 1 in the period t, out of pupils in the period t-1, is then given by the relationship

$$\sum_{i=1}^{n} a_{i1} = A_j^{t} \quad (\text{for } j=1,2,\ldots n) \qquad /4/$$

If the passage of pupils from individual grades in the period t-1 into respective grades in the period t is written down, we obtain the following set of equations:

$$\begin{array}{l} a_{11} + a_{21} + \ldots + a_{n1} = A_1^t \\ a_{12} + a_{22} + \ldots + a_{n2} = A_2^t \\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots \\ a_{1n} + a_{2n} + \ldots + a_{nn} = A_n^t \end{array} \qquad /5/$$

It is therefore generally valid that:

$$\sum_{i=1}^{n} a_{ij} = A_j^t \qquad (\text{for } j=1,2,\ldots n) \qquad /6/$$

The above said implies that there exists a difference between indicators of the total numbers of pupils S_i and S_j and totals of indicators of pupil flows A_i and A_j. Indicators A_{ijj}^{t-1} represent only numbers of pupils having attended the examined type of school in the given territory in both periods, i.e. in the period t-1 and that of t. The matrix expressing the passage of pupils $\underline{A}$ then contains only numbers of pupils having attended the given type of school in the territory under examination in both subsequent periods and, correspondingly, it does not cover pupils having in the meantime entered or left the system. A synoptical arrangement of these variables is given in Table 1.

The arrangement of matrix A provides for the continuity between indicators of the total number of pupils in individual grades for individual subsequent periods. This continuity is illustrated in the Chart 1 where squares express indicators of the totals of pupils in individual grades and circles stand for indicators of pupil flows. Let this continuity of educational system be called an *internal network of feedbacks*; in addition, there exists in the educational system also a *horizontal continuity* representing the continuity between different types of schools of the same cycle as well as a *vertical continuity*, reflecting the continuity between individual mutually interrelated cycles of educational system. Both the horizontal and vertical continuity, as illustrated upon the example of elementary nine-year school, are represented in the Chart 2.

On the basis of data contained in the Table arranged into two levels to represent pupil flows /see Table 1/, models of two types may be constructed:

1. *Forecasting model - that of offer* - enabling to calculate, on the basis of the known number of pupils enrolled into individual grades in the period t-1 (symbols $S_{i_t}^{t-1}$), numbers of pupils enrolled in the subsequent period (symbols $S_j^{i_t}$) as well as numbers of pupils who will terminate the study in the course of examined period (symbols a_{iv}). The direction of calculation in this model is represented by uninterrupted arrows /see Table 2/.

2. *Model of demand - ex post* makes it possible to make a reverse calculation, on the basis of the known number of pupils terminating their study, i.e. particularly graduates (symbols a_v), of total numbers of pupils newly enrolled into individual grades in the period under examination. The direction of calculation in this model is represented by broken arrows in Table 2.

Both the above models were quantified on the set of elementary nine-year school pupils in Slovakia in the period 1971-1973.

Table 2. The chart of procedure used to construct forecasting and demand models of educational activities

From \ To			Total	Space under examination		External space /external output/
				current period t	future period t+1	
			1	2	3	4
Total		1		S_j^t	S_j^{t+1}	
Examined space	Past period t-1	2	S_i^{t-1}	A^{t-1}		a_v^{t-1}
	current period t	3	S_i^t		A^t	a_v^t
External space /external output/		4		a_p^t	a_p^{t+1}	

2. Forecasting model of pupils' training in educational establishment of one type

The forecasting model of pupils' training constitutes, so to say, a type of an offer model which on the basis of already existing numbers of enrolled pupils or planned numbers of pupils newly admitted into the first grades makes it possible to quantify total numbers of pupils leaving the examined type of school in its individual grades - either graduating from the last grade or stepping out of school in some other way.

This means that input data of the model are provided by total numbers of pupils enrolled into individual grades in the periodt-1, consequently, column vector S_i^{t-1}.

Other input data are constituted by total numbers of newly enrolled pupils who were for the first time admitted in the school of the type under examination and who will be designated as a_{jp}.

Input variables in the forecasting model are then represented by the following types of statistical variables:

1. exogeneous variables - variables entering the model from another system;

a_p^t is the number of newly enrolled pupils into individual grades /external input/,

2. endogeneous variables, at the same time explained by the model:

S_i^{t-1} is the number of pupils enrolled into individual grades in the period t-1 /the so-called internal input/.

Output variables will be then in the given forecasting model constituted by the following variables:

S_j^t is the number of pupils enrolled into individual grades in the period t, and

a_v^{t-1} is the number of pupils having left the school in the period between t-1 and t.

2.1 Specification of forecasting model coefficients

On the basis of data concerning pupil situation, presented in Tablo 1, we may establish the coefficients of passage of elementary school pupils between the periods t-1 and t. Generally, this coefficient of passage may be formulated as follows:

$$\alpha_{ij} = \frac{a_{ij}^{t-1}}{S_i^{t-1}} \qquad /9/$$

where a_{ij}^{t-1} is the number of pupils having passed from grade i in the period t-1 to grade j in the period t,

S_i^{t-1} is the overall number of pupils in grade i in the period t-1.

The general coefficient of passage may be specified for individual application as follows:

1. coefficient of pupils repeating the grade:

$$\alpha_{ii} = \frac{a_{ii}^{t-1}}{S_i^{t-1}} \qquad /10/$$

where a_{ii}^{t-1} is the number of pupils having attended the same grade in the periods t-1 and t (i=j),

S_i^{t-1} is the total number of pupils in the grade i in the period t-1;

2. coefficient of pupils passing to the higher grade:

$$\alpha_{ij} = \frac{a_{ij}^{t-1}}{S_i^{t-1}} \qquad /11/$$

where a_{ij}^{t-1} is the number of pupils having passed from grade i in the period t-1 to grade j in the period t (i≠j),

S_i^{t-1} is the total number of pupils in grade i in the period t-1;

3. coefficient of pupils having left the school:

$$\alpha_{iv} = \frac{a_{iv}^{t-1}}{S_i^{t-1}} \qquad /12/$$

where a_{iv}^{t-1} is the number of pupils of the grade i having left the school in the period t-1,

S_i^{t-1} is the total number of pupils in the grade i in the period t-1.

The sum of the above special coefficients of passage is equal to 1 for individual grades i:

$$\alpha_{ii} + \alpha_{ij} + \alpha_{iv} = 1 \qquad /13/$$

The procedure used to construct the basic matrix $\underline{A}$ illustrating the passage of pupils on the basis of number of students passing to higher grades, may be used also to construct the matrix $\underline{\alpha}$ /in square brackets/:

Table 3. Coefficients of the passage of pupils with the matrix $[\alpha]$

i j	1	2	...	n	v	j
1	11	12	...	1n	1v	1
2	21	22	...	2n	2v	1
.	.	.	...	.	.	.
.	.	.	...	.	.	.
n	n1	n2	...	nn	nv	1

The coefficients α_{ij} are calculated on the basis of input data. The matrix $\underline{\alpha}$ is thus also that of "input" coefficients and the forecasting model is based on these coefficients.

2.2. Mathematical formulation of the forecasting model

The total number of pupils passing to higher grades at the school under examination between the periods t-1 and t might be established on the basis of equation /9/ as follows:

$$a_{ij}^{t-1} = \alpha_{ij}^{t-1} \cdot S_i^{t-1} \qquad /14/$$

The total sum of pupils in individual grades may be ascertained from the equation:

$$S_j^{t} = \sum_{i=1}^{n} a_{ij}^{t-1} + a_{jp}^{t} = A_j^{t-1} + a_{jp}^{t} \qquad /15/$$

or:

$$S_j^{t} = \sum_{i=1}^{n} \alpha_{ij} S_i^{t-1} + a_{jp}^{t} \qquad /16/$$

The equation /15/ means that the total number of pupils enrolled in the grade j in the period t is made up of the number of pupils having attended in the periods t-1 and t the elementary schools in the given territory on the one hand and of the number of pupils who did not attend the elementary schools in the given territory in the period t-1 /a_{jp}/, i.e. who enrolled into the system for the first time only in the period t , on the other hand. This is therefore an exogeneous variable, independent of the given model; it must be established seperately and introduced into the model subsequently. As far as the first grade is concerned, this variable represents /with respect to elementary schools/ children admitted to the school for the first time and as such depends upon demographic conditions in the given territory. In the case of other grades it represents particularly those pupils coming to the given territory from other, external ones.

In matrix form, the formula /16/ has the following shape for all the grades:

$$/s_1^{t}, \ldots s_n^{t}/ = /s_1^{t-1}, \ldots s_n^{t-1}/ . \begin{bmatrix} \alpha_{11} \ldots & \alpha_{1n} \\ \vdots & \vdots \\ \alpha_{n1} & \alpha_{nn} \end{bmatrix} + /a_{1p}^{t}, \ldots a_{np}^{t}/$$

If the line vector of enrolled pupils is designated as s_j', then we write briefly:

$$s_j'^{t} = s_i'^{t-1} \; . \; \underline{\alpha} \; + a_{jp}'^{T} \qquad /18/$$

and after the transposition

$$\hat{s}_j^{t} = \underline{\alpha}^{T} . \hat{S}_i^{t-1} + a_{jp}^{t} = \Delta^{T,t-1} + a_{jp}^{T} \qquad /19/$$

where S_i is the diagonal matrix constructed from the vector s_i'.

The entry /19/ constitutes a set of linear equations uniting the number of students enrolled into individual grades in the period t to the number of pupils enrolled in the period $t-1$ and to the number of newly admitted pupils in the period t. Assuming that the matrix of $\underline{\alpha}$ coefficients is constant, i.e. no changes in the so-called "dropout rate" are expected to occur in individual grades, these equations may be used for the purpose of projection. Thus, for the period $t+1$ we might write:

$$s_j^{t+1} = \underline{\alpha}^{T} . s_i^{t} + a_{jp}^{t+1}, \text{ etc.}$$

If a change in the pupils performance /"dropout rate"/ is expected, it must be assessed through other mathematical methods and these methods must substitute for the estimated average coefficients $_{ij}$. When an efficient computing technology is used, the above 1-step method may be applied without difficulty even for making long-term forecasts.

3. Ex-post /demand/ model of an educational establishment

Contrary to the forecasting model, the ex-post model of training is based upon the number of pupils who are expected to leave /graduate from/ the educational establishment in the given period. The significance of the ex-post model lies in the fact that it enables to calculate the number of pupils who should be admitted to the 1st grade of the given type of school in order to ensure that the necessary quantity of graduates leaves the establishment after the pertinent period of study.

The calculation procedure is illustrated by broken arrows in Table 2.

Input variables in the ex-post model will then be the following:

1. exogeneous variables, introduced into the model from another system:

a_v^t the number of pupils having successfully completed the last grade study or having left the school in another grade,

2. endogeneous variables, simultaneously explained by the model:

S_j^t the number of pupils enrolled into individual grades in the period t.

Output variables in the ex-post model will then be the following:

S_j^t the number of pupils enrolled into individual grades in the period t-1

a_p^t the total number of newly admitted pupils into individual grades.

3.1. Specification of the ex-post model

On the basis of absolute data from Table 1 we shall proceed to establishing the coefficient ϱ_{ij} in the following manner:

$$\varrho_{ij} = \frac{a_{ij}^{t-1}}{a_{iv}^{t-1}}$$

where a_{ij}^{t-1} is the number of pupils of the grade i in the period t-1, having passed to the grade j in the period t,

a_{iv}^{t-1} is the number of pupils having left the grade i of the given type of school during the period t-1.

In a succint matrix form the relationship /21/ may be written as follows:

$$\underline{\varrho} = \left(\hat{\underline{a}}_v^{t-1}\right)^{-1} \cdot \underline{A}^{t-1} \qquad /22/$$

where $\underline{\varrho}$ is the matrix of coefficients ϱ_{ij}

$\hat{\underline{a}}_v^{t-1}$ is the diagonal matrix of pupils having left the school in the period t-1,

$\left(\hat{\underline{a}}_v^{t-1}\right)^{-1}$ is the inverse diagonal matrix,

$\underline{A}^{t-1}$ is the basic matrix of the passage of pupils in the period t-1.

3.2. Mathematical formulation of the ex-post model

It also follows from the relationship /22/:

$$\underline{A}^{t-1} = \hat{a}_v^{t-1} \cdot \underline{\varrho} \qquad /23/$$

and similarly for the period t:

$$\underline{A}^t = \hat{a}_v^t \cdot \underline{\varrho} \qquad /24/$$

It is therefore valid for the period t that the matrix $\underline{A}$ of pupil flows in the period t will be the result of a multiplication of coefficients $\underline{\varrho}$ and given number of pupils who will graduate and leave the school in the period t. Multiplying the matrix $\underline{A}^t$ of pupil flows by the unit column vector I we determine the vector of the number of pupils passing to individual grades from the period t to the period t+1 /A_1^t/:

$$A_1^t = \underline{A}^t \cdot I \qquad /25/$$

To continue:

$$S_1^t = A_1^t + a_{1v}^t \qquad /26/$$

i.e. the number of pupils enrolled into individual grades i in the period t/S_1^t/ is the sum of pupils who will remain at the given type of school also in the period t+1 - /A_1^t/ - and of pupils who will leave the school during the given period /a_{1v}^t/. From the matrix $\underline{A}^t$ thus obtained we shall calculate the vector A_1^t multiplying it by the unit vector I:

$$\underline{A}^t \cdot I = A_1^t \qquad /27/$$

If we now add to the figures, expressing the numbers of pupils enrolled into individual grades in the period t out of the total number of pupils enrolled also in the period t-1, the number of pupils having left the school during the period t/a_{1v}^t/, we shall obtain the total number of pupils enrolled into individual grades in the period t.

And finally we proceed to establishing the variables a_{jp}^t. As:

$$a_{jp}^{t} = S_{j}^{t} - A_{j}^{t-1}, \qquad /28/$$

then the number of newly admitted pupils may be calculated by substracting, from the known total number of pupils enrolled in the grade j in the period t/S_j^t/, those pupils having studied in the given school in both periods t-1 and t /A_j^{t-1}/.

For this purpose we need to know new coefficients ω_{ij} according to the following relationship:

$$\omega_{ij} = \frac{a_{ij}^{t-1}}{S_{j}^{t}} \qquad /29/$$

where a_{ij}^{t-1} is the number of pupils having passed from the grade i in the period t-1 into the grade j in the period t,

S_j^t is the number of pupils enrolled into the grade j in the period t.

The abbreviated matrix notation of /29/ has the following form:

$$\underline{\omega} = \hat{S}_{i}^{t-1} \, . \, \underline{A}^{t-1} \qquad /30/$$

where $\underline{\omega}$ is the matrix of coefficients of the type nxn,

S_i^{t-1} is the diagonal inverse matrix constructed on the basis of the vector of number of pupils enrolled in the period t,

$\underline{A}^{t-1}$ is the matrix of pupil passage from the period t-1 to the period t.

The calculation of the matrix representing the passage of pupils from the period t-1 to the period t follows from the relationship /30/:

$$\underline{A}^{t-1} = S_{i}^{t} \, . \, \underline{\omega} \qquad /31/$$

On the basis of the obtained values of A_j^t we may now establish a_{jp}^t - number of pupils newly admitted in the period t according to:

$$a_{jp}^t = S_j^t - A_j^t \qquad /32/$$

The ex-post model of training will be of better use at the secondary schools and university-level schools where the enrollment is determined by the need for professionally skilled persons.

4. Matrices of vertical and horizontal continuity of a comprehensive education system

In the educational system consisting of several levels there are certain interconnections between individual types of schools and school cycles which must be represented in the model. Thus, for example, the number of students admitted to schools of higher cycle depends upon that of students having completed the lower cycle. The model represents the above interdependencies through matrices of newly admitted pupils and those of leaving pupils which are constructed in such a manner so as to illustrate, in addition to the pupil flows between individual cycles also flows of pupils passing from one type of school into a school of another type within the same cycle. Besides basic matrices given in absolute figures there are also matrices of respective coefficients intended for the projection of distribution of corresponding graduation classes. As the description of these matrices is also quite extensive, we make no attempt at it in the present paper and those interested are referred to the pertinent paper of the author.

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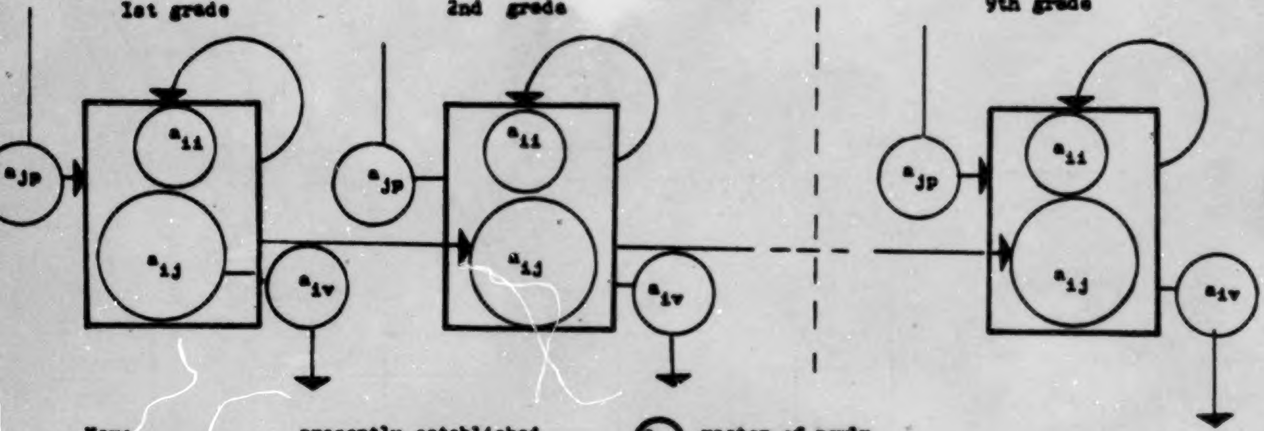
Graph I

Scheme of internal network of links in the model for calculating the number of elementary school pupils by individual grades


1st grade
2nd grade
9th grade
a_{jp}
a_{ii}
a_{ij}
a_{iv}

Key:

☐ presently established indicators or the state of pupils

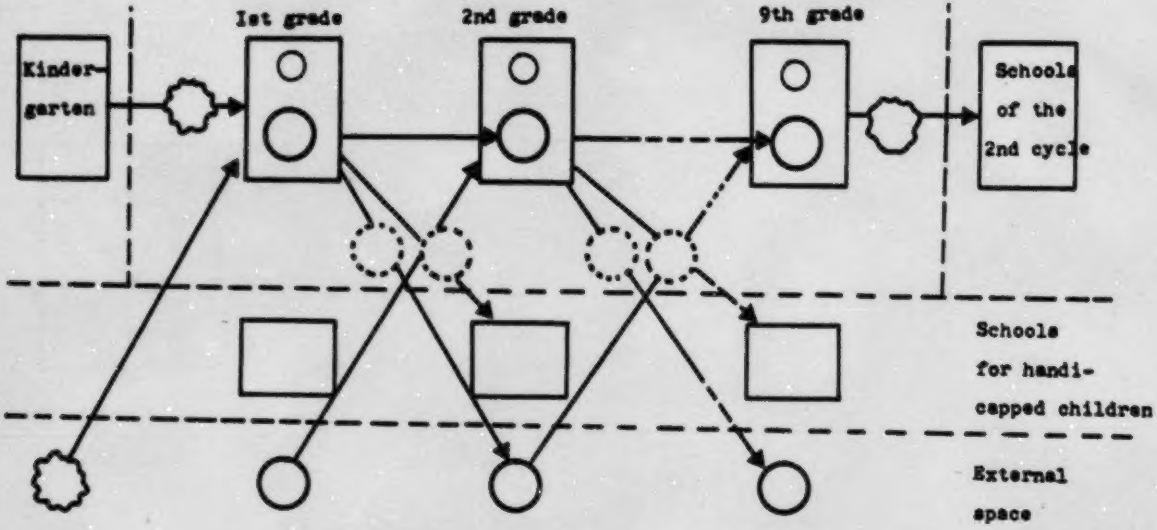
a_{jp} vector of newly admitted pupils

a_{ii} a_{ij} indicators of the flow of pupils, data of the matrix

a_{iv} vector of pupils having left the school

Graph 2

Scheme of state and flow indicators of elementary school pupils according to the draft comprehensive system of school statistic


Kindergarten
1st grade
2nd grade
9th grade
Schools of the 2nd cycle
Schools for handicapped children
External space

Key:

▢ indicators of states of the internal network of links

○ indicators of vertical continuity

◌ indicators of horizontal continuity

SETTING UP A UNIFIED INTEGRATED INFORMATION SYSTEM ON EDUCATIONAL INFORMATION IN CZECHOSLOVAKIA

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As Dr. Lihocký mentioned in his opening report, the constitution of well functioning information systems in the Czechoslovak Socialist Republic stands in the foreground of interest of State and Party bodies. After deliberations of the situation in the area of introducing achievements of world science and technology into our national economy at the session of the Presidium of the Central Committee of the Communist Party of Czechoslovakia, the Czechoslovak Government decided as early as in 1959 to lay foundations for organised efforts oriented towards the creation of information centres and systems in individual branches of national economy.

In 1970, the Czechoslovak Government incorporated into its long-term programmes for the development of national economy, also the programme for developing the State information policy, with a view to setting up a unified integrated nationwide information system capable of being interconnected with the international information systems. The implementation of this programme was assessed at a Government session in 1973 which, on the basis of the results obtained, made, in the same year, the decision concerning further development of information systems, their improvement by means of wider introduction of computer technique and their incorporation into the automated system of management. The above decisions by the Government provided the impetus to Ministries of Education of the Czech and Slovak Socialist Republics which, on their part, took necessary measures aimed at finalizing the creation of information system in education, the foundations for which were put in 1967 by the establishment of the Prague Institute of Educational Information.

At the 1st international EDICO colloquium held in 1974 in Prague, representatives of our institutes of educational information reported on the situation in the area of analysis and preparatory stage of the project for setting up and developing the system of educational information in Czechoslovakia, and outlined the future course of action. In the last year of the fifth Five-Year Plan, i.e. in 1975, the Project for gradual constitution of educational information system was elaborated. This project was based on findings obtained from the analysis of situation and needs and it utilized also some of the conclusions and recommendations of the EDICO colloquium in so far as they corresponded to our needs and possibilities. In the sixth Five-Year Plan period, this programme should be implemented as part of the State Plan for the development of science and technology, into which it has been included as an independent project within the programme for State information policy; and since 1976 concrete steps for its implementation have been taken. At the present period, the first phase of setting up a nationwide system of scientific and technological information in the area of education, intended to meet the needs of managerial workers of the two Ministries of Education, workers at other levels of management, research workers in the field of education and of pedagogical personnel as such, is in progress. This first phase is planned for completion by the end of 1980.

The project of educational information system takes for its starting point normative Party and Governmental decisions, applying to the national economy as a whole. The significance of information system in education, was, moreover, underlined in the conclusions adopted by the 15th Congress of the Communist Party of Czechoslovakia for the sphere of ideological and political education and in the document On Further Development of the Czechoslovak Educational System adopted by the Presidium of the Central Committee of the Communist Party of Czechoslovakia at its session.

As has already been said in the report of Ing. Josef Kiss, Deputy Minister of Education of the Slovak Socialist Republic, generations of educated workers, cooperative farmers, technological, cultural and scientific workers were trained, in the past period, to meet the needs of all the sectors of national economy and culture. This was made possible thanks to a highly developed system of education for children, young people and adults.

The unified nine-year school, compulsory for all the children, facilitated access to secondary and university education for a large proportion of population.

Successful construction of an advanced socialist society implies the development of its material base, science and technology, improvement of socialist relationships, strengthening of socialist consciousness, cultural development and increase in educational level of the population. Large-scale introduction of scientific developments into practical life, fulfilment of demanding tasks connected with the construction of an advanced socialist society, call for further substantial improvements in the quality of education of the young generation, in the educational system as such.

The 15th Congress of the Communist Party of Czechoslovakia has, therefore, dealt with the above questions, emphasizing the intensification and improvement of ideological work in all its dimensions. In June 1976, immediately following the Congress, the CC Presidium of the CPCz issued the document entitled On Further Development of the Czechoslovak Educational System.

This document stipulates the necessity for creating conditions to assure secondary education for all mentally able young people, to provide complete secondary education, to an overwhelming majority of young people, to enable an ever-increasing number of young people to receive university education, to launch the system of lifelong education and to train, in this way, young people and all the working people to accomplish successfully the demanding tasks confronting our society.

The compulsory school attendance is followed, after the completion of the elementary school, by a minimum two-year study at a secondary school. This is a guarantee that any mentally able young person receives secondary education. Complete secondary education may be obtained after completing another two years of the respective secondary school.

The unified education system is based upon a unified system of schools and facilities, the attendance of which is compulsory for children and young people between 6 and 16 years of age. Unified curricula, unified syllabi and textbooks, respecting national characteristics and characteristic of national minorities, are obligatory for the entire territory of our Republic. The unified programme of educational work applies also to establishments for preschool edûcation - crèches and kindergartens. All the schools and educational establishments are public and accessible to any Czechoslovak citizen under equal conditions, regardless of nationality, sex, property and social origin. Education, textbooks and teaching aids at elementary and secondary schools are provided free of charge.

Central managerial functions are effected by the Ministries of Education of the Czech and Slovak Socialist Republics, that are in charge of the implementation of unified nationwide education policy on the territory of respective national Republics, with respect to all the federal and national bodies and central authorities as well as to social organizations and institutions taking part in education.

The managerial activities of Ministries as bodies of the State school administration consist primarily in working out conceptions for the development of educational process, in publishing obligatory norms for ideological and political, pedagogical, personnel, economic areas and in supervizing the attainment of the objectives pursued.

In order to be able to accomplish this mission to a full degree, and to proceed in an objective way, the State school administration must rest upon a system which would enable it to master extensive and complex problems related to education in all of its aspects and levels.

To create such system, the two Ministries of Education launched a joint project whose objective was: to supply the two Ministries and other bodies with objective information necessary for decision-making processes and thus to guarantee optimum utilization of material, financial and human resources, accelerate and rationalize transfer, storage and processing of a large quantity of information, without having to increase the number of managerial workers. This task aims at creating an automated system of management and it is evident that this system must be based on information of different type and from different areas. Its accomplishment, therefore, depends necessarily on the rapid constitution of a unified information base that would ensure the comprehensiveness of needed information. Such a unified integrated information base will be established as a result of gradual integration of individual information systems, particularly those of socio-economic information, planning information and scientific and technological information - in our case with educational orientation - or information from some other areas.

The system must provide for following the current information, supplying the user with operational information on changes contrary to the anticipated course of events, on the accomplishment of planned tasks in the area of economy and educational process, or information on reasons underlying the inadequate fulfilment of the objectives fixed. Final outputs from the information system must constitute objective foundations for managerial and decision-making activity.

When speaking about a gradual integration, we have in mind the fact that individual information systems will be developing in a relatively independent manner. Their relative independence stems from the fact that the unified integrated system involves the establishment and application of a unified classification of information sources, unified methodics of their processing, storage and arrangement, unified vertical and horizontal interconnection, each individual system or subsystem being constituted in accordance with an independent or sector task of scientific and technological development, conserving its basic characteristic features.

The principle of the unified integrated system was applied already to the establishment of the two institutes of educational information, both of them being oriented on the collection of information on the widest scale. Although the constitution of a perfect information system will require considerably more additional efforts, particularly in connection with the introduction of modern technology into information processes, the two institutes have already been supplying managerial bodies with a large quantity of infomation from the socio-economic, scientific and technological, educational and planning areas.

The creation of an information system for the needs of education is, therefore, conceived in our country as that of a unified system integrating all the information sources, necessary for managerial, research and pedagogical activities, which will gradually emerge as a result of integration of independently built information subsystems; a parallel may be drawn with the system of scientific and technological information, specific measures for the completion of which were taken in 1976. The information system in the area of education will be established along the lines set out in the approved project and constituted by information centres of three types created at schools of different levels, educational and other facilities. The central role in this system will be played by sector information centres of processing type set up at selected universities and sector organizations. The most important share in this information system will be taken by basic information centres being, or having been set up at secondary vocational schools, eventually at schools of other type, at district and regional managerial bodies which will function as principal users. Central coordination and methodical guidance will be provided by the two institutes of educational information functioning as national information centres which will, at the same time, fulfil the role of basic information centre in relation to superior Ministries of Education, eventually other managerial organs. The agreement, signed between Ministers of Education of the two national Republics, assigned the Prague Institute of Educational Information the role of central coordination and methodical guidance for the Czechoslovak Socialist Republic as a whole. For the Slovak Socialist Republic this function is effected by its Bratislava counterpart. In this context, superior bodies gave their approval for the establishment of a Sector Information Centre within the Prague Institute of Educational Information and of a Subject-Oriented Information Centre within the Bratislava Institute of Educational Information. In accordance with the nationwide competence of the Sector Information Centre, the Prague Institute of Educational Information was ascribed the role of the coordinator for the accomplishment of State project for setting up the system of scientific and technological information in the area of education.

This State project is subdivided into four subprojects having, in spite of their close interconnection, different character as regards the approach adopted for the solution and the deadline set out for its completion.

The first subproject to be carried out has the objective of constituting subject-oriented information centres of processing character and determining the scope of their activity and sphere of action in the area of education. The completion of this subproject is scheduled for the next year /1978/ and its fulfilment to this date suggests that it will be completed in time. This subproject consists not only in selecting organizations appropriate for carrying out information activity of the given type and in determining the scope of this activity, but also in creating conditions, both within the organisation and within its linkage to existing or newly established basic information centres, and in providing for the feedback flow of information to basic centres on the one hand and to the Sector Information Centre on the other hand.

The solution of this subproject embodies also the constitution of subject-oriented and basic information centres whose main line of activity does not fall under the given sector information system in education, attached to schools and educational establishments with technological, economic, agricultural and other orientations. On the basis of inter-sector agreements, these centres will be or already are coordinated and directed from the methodical point of view by respective sectors but will constitute, nevertheless, a component of integrated educational information system.

The question of the optimum profiling of the information fund for educational information system is parallelly solvad as the second subproject. An analysis is being presently carried out in selected libraries as regards their capacity of funds with respect to their type, subjects and purposefulness. Findings established by this analysis will be used to determine an optimum profiling which should, while providing for maximum comprehensiveness, prevent duplicity, multiplicity, do away with inappropriate and low-quality funds, determine conditions enabling a purposeful and qualified acquisition and fund maintenance activity. The first stage in profiling information funds should be completed by the end of 1976 by the Comenius State Pedagogical Library attached to the Prague Institute of Educational Information and other selected libraries. In the forthcoming period, this profiling activity will be made more accurate and will be complemented by the profiling of funds possessed by libraries established in individual subject-oriented information centres.

The third subproject related to the implementation of the project of setting up the educational information system, covers conditions necessary for promoting the development of the Czechoslovak educational system, i.e. it reflects the ever-growing interest in increasing the effectiveness of educational system, in improving results of research effected in this area as well as growing requirements for a better information service for the needs of educational planning and school management, of scientific forecasting of the development of pedagogical theory and educational practice, etc. Promptness, scope and quality of today´s information services are still lagging behind the above requirements. The third subproject thus aims at ensuring better acquisition, production and distribution of primary and secondary information funds, accelerating the processing and the accessibility of formal and informal, verbal and factographic information in our sphere. The prerequisite for the fulfilment of this subproject is a perfect knowledge of needs of information users at different levels of management, planning and forecasting of educational policy, research and practice. For this reason, a detailed analysis of these needs is presently in progress, receiving an active support and cooperation from the part of managerial workers and Ministries of Education, and selected groups of all the above-mentioned categories of workers.

The optimisation of information outputs depends, however, also on the capacity of individual information centres, on their approach towards producing these outputs, on the utilisation and extension of scope and effectiveness of progressive forms of the production of information being, in our opinion, to a great extent determined by a high proportion of intellectual activity exerted on the part of information workers. The optimisation of information outputs requires, moreover, that prerequisites be created for the transition to advanced technologies of information processing and dissemination, corresponding to actual needs of information of their users. We have in mind primarily personalised information, abstract reports and series of factographic information. The problem of information optimisation, coupled with an acceleration of their flows and guarantee of their relative comprehensiveness is related to the fact that the general description, for example a bibliographical entry, may be simple, but the user is interested in the subject itself, in grasping the substance of the problem, in the instrumentality and functional applicability of the given information. At the same time, the scope of individual information, the quantity of data received and thus the overall volume of the envisaged information output must correspond to the time available by managerial workers which is, as a rule, considerebly limited owing to their heavy workload. The aim is, therefore, to provide these workers with the largest possible quantity of the most relevent information in the shortest possible time.

Basic principles for the optimisation of information outputs and corresponding work methods should be worked out by the end of 1980 so as to enable implementation, already from 1980 onwards, of the first pilot runs of instrumentally oriented optimal information outputs for individual categories of workers.

We believe that the key problem in the implementation of the global State project consists in the system of educational information arrangement.

This project was begun in the past year /1976/ by the analysis of present findings from this area. In this case, however, the analysis was not oriented exclusively to the existing situation in the Czechoslovak school sector, but particularly to results obtained in other sectors and other countries.

We should like to make the fullest possible use of experiences gathered by Czechoslovak information institutions up to this date, those of international information institutions and of national information establishments of other countries in which modern systems of information classification have already been utilised and thesauruses and indexing languages of the descriptive type have been in operation. We make efforts at evaluating the advantages and drawbacks of these systems, finding possibilities of application and the solution corresponding to our conditions. We should like to complete also this project rapidly enough so as to being able to draft, by 1980, the first variant of a classification system, at least with respect to certain most significant problem areas, into which we have subdivided the sphere of educational matters.

In solving this project as in solving other subprojects we concentrate not only efforts of our associated information institutes of Prague and Bratislava, but we call also on workers of sector scientific institutions and universities, prominent specialists, pedagogues, sociologists, lawyers, linguists, information scientists and systems engineers from the field of education and from other fields. We succeeded in incorporating these workers into work teams, solving individual problems involved in the State project and establishing, in this way, a large task force. However, the need for coordination and cooperation on the international scale is most markedly apparent in connection with this fourth subproject. If, in the future, we intend to build an international information system in the area of education, providing information ready to be promptly and purposefully received by its individual constituents, we must create conditions ensuring their mutual interconnection and continuity of information outputs, which is unconceivable without a unified joint system of classification worked out on the basis of a wide-scale and systematic international cooperation. We believe that this problem should be in the centre of interest of all the countries interested in international information exchange, regardless of their social, political and economic systems. The traditional universal decimal classification, in spite of its many positive aspects, does not fully satisfy newly arisen needs. In connection with the scientific and technological development there are many new notions and phenomena penetrating into the theory of education and practice, there keep arising new approaches and new problems that the traditional universal decimal classification is not able to encompass and that, consequently, call for the constitution of a new, modern system of classification. The need for setting up such classification system is related also to increasingly marked trends towards the fullest possible automation of individual operations on the national as well as international scale. Though the importance and role of technology in information processing is, in our opinion, frequently overestimated and the irreplaceability of human factor - information specialist - underestimated, we are well aware of the fact that the acceleration of information flows and improvement of information outputs may be achieved exclusively through the introduction of automation into information processes. We believe, however, that truly positive results may be obtained only on the basis of a comprehensive and thorough preparatory work, without which resulting drawbacks might be greater than accruing benefits.

Experience concerning the constitution of similar information systems in our national economy and abroad is utilised not only in connection with this last partial task, but in the entire set of problems to be solved. We utilise stimuli arising from bilateral negotiations with partner information institutions, primarily from the C.M.E.A. countries, as well as stimuli furnished by UNESCO and UNESCO-BIE. We proceed from the fact that a number of educational problems are common to most countries, that considerable efforts and means are devoted to their solution, that outcomes of this striving are not adequate because of the failure to achieve a smooth and continuous flow of information exchange on the international scale. We believe that the development of international cooperation in the sphere of education is inevitable in the future but its existence is contingent on a, from the organisational point of view, well functioning, and relatively independent national information system.

It has to be stated, however, that thus far only few specific attempts have been made at coordinated approach towards improving the international exchange of information and, as a matter of fact, the international system of educational information lags behind other branches of national economy. To this date we recorded only isolated attempts at bilateral or multilateral cooperation, without coming to a really concrete solution. We therefore welcome and highly appreciate this 2nd international EDICO colloquium, organised, on the UNESCO and UNESCO-BIE initiative and with their support as well as with our cooperation, by the Ministry of Education of the Slovak Socialist Republic and the Bratislava Institute of Educational Information.

We take advantage of this meeting to present two suggestions which might be eventually included into conclusions.

First, we should consider it useful if all participating countries agreed, at this colloquium, on a mutual and swift exchange of basic normative information such as laws, national administrative decisions and measures taken by the State authorities to regulate the situation in the area of education, eventually in educational information systems.

Second, we recommend that participating countries nominate their representatives as members of a working group set up to work out and recommend a long-term plan of subjects to be discussed at the meetings of this kind, and recommend the time-table for bilateral and multilateral negotations between participating countries concerning their mutual cooperation which would gradually establish the base for large-scale international cooperation.

In conclusion, I should like to pronounce that as members of the nation, which took up the legacy of John Amos Comenius, teacher of nations, we consider it our duty and honour to do our best to make the information activity assist, ever more effectively, education, its management, the all-around development of man prepared to live and work in a world without wars, poverty, maladies and hunger, under conditions of intensifying mutually advantageous cooperation among all the countries, regardless of their social, political and economic systems.

AN AUTOMATED SYSTEM OF MANAGEMENT IN EDUCATION

Augustín Nižňanský - Ján Kotúč, Institute of Computing Technique of Higher Education Institutions of Comenius University, Bratislava

The State programme of economic research incorporates the most significant economic projects of basic and applied research, solved in Czechoslovakia. This programme includes also the project of "Automated system of management in education" aiming at the examination of questions related to rationalization and automation in the administration of education sectors of the Czech and Slovak Socialist Republics. On the basis of the knowledge of the actual situation and theoretical papers from this area, it should be conducive to working out a system of objective scientific methods and procedures of processing input information into numerical sets, by means of computer technology, to provide background material for management bodies.

The automated system of management /ASM/ is conceived as a rationalized system of management under conditions of automation and computer technology. It implies a qualitatively new approach towards the solution of cognitive process of management and decision-making, processing information on the basis of scientific methods enabling an interconnection between information and management systems. The automated system of management may not, therefore, be identified with the transfer of certain files to the computer as an instance of elementary utilization of computer technology; it constitutes a system of collection, transfer and storage of information and its processing by means of mathematical methods and modelling, using high-performance computers.

Speaking about the automated system of management in education, we proceed from the position of the Ministry of Education as the organ managing and providing for all the functions of socialist education. The ASM must, consequently, cover the broad problem area connected with the management of educational sector, with all its unifying and integrating elements. The comprehensiveness of ASM implementation means that it must encompass the system of socioeconomic, planning, standard-setting and other types of information necessary for individual levels of management. Unifying and integrating elements of the system are represented by the structure of the project, characterized by a unified classification, unified description of internal and external linkage of information flows. The integration of the system implies a vertical and horizontal interconnection, reflecting the downward direction of the system of management and an interconnection between individual subsystems in accordance with outlined spheres of activity, as well as compatibility with other systems.

When approaching the project of ASM in education we consistently apply the system of design and unified management of the Czechoslovak school system. Outcomes of this research project are intended to help in the decision-making and management activity in the sphere of education effected by Ministries of Education of the Czech and Slovak Socialist Republics, to meet the needs of administration of schools at university, elementary and secondary level effected by the

Ministry of Education, regional or district national committees. From the point of view of the content, the project focuses on the modelling of managerial activities from the following areas:

- educational,
- research,
- ideological and political,
- personnel,
- economic and administrative.

In solving decisive crucial tasks of the ASM within the above activities, a special emphasis is laid upon the creation of a data bank and method bank enabling to attain a higher qualitative level of information processing. The conception of setting up an automated system of management includes also the problems of information systems and problems related to setting up a computer system in the sector of education.

The nearest objective to be reached in connection with the ASM is to work out, by 1980, the first version of the ASM model for the needs of the machinery of the Ministries of Education, standard model of the university ASM and ASM model for elementary and secondary school administration. From the organizational point of view, we have designated problem-solving teams to accomplish the above mentioned tasks; presently, these teams are being stabilised and reinforced.

The introduction of the ASM into education will enable workers of the managerial apparatus to devote considerably more time to analyses and decision-making in the process of managing their sector than before, as the routine calculating work will be taken over by the computer and projects solved at the level of models will provide for a rapid and objective decision-making. It may be realistically assumed that it will result particularly in improved quality of management and in:

- the improvement of management and the automation of work activities in the areas having decisive importance in the process of management or involving a large volume of calculating work, eventually, being appropriate for automated processing;
- the automation of information transfer, storage and processing, without increasing the number of workers of managerial apparatus and a substantial reduction of information processing time;
- an improved supply of information to workers of the Ministry apparatus, providing accurate, complete and objective data for the needs of qualified decision-making;
- an increase in efficiency of the control of managerial functions at schools as well as of the control of other directly administered organizations.

The solution of the ASM project in education, in accordance with approved methodic instructions, implies that ASM project tasks will be elaborated in 1977 for individual levels of management. These project tasks are preceded by an investigation and analysis into the subject of the ASM. In the period 1978-1979 technical projects, working out the planned ASM problems up to the algorithm and software stage, will be completed; these projects are of a decisive importance for the constitution of data base and the solution of key target projects. In 1980, implementation projects enabling a subsequent utilisation of those parts of the ASM that will be solved by that time, at the level of the Ministry, universities and methodical guidance of elementary and secondary schools, will be carried out.

The constitution of an ASM is a demanding and complex task, requiring a thorough understanding of problems encountered by the respective level of management in their totality, and particularly in detail. Those solving this task must be familiar with the managerial problems and those assigning it /Ministry of Education, universities/ must provide the former with foundation material, appropriate for the solution of decisive components of the ASM, such as the constitution of a data bank and set of methods and programmes for processing input information at various levels. The procedure for acquiring knowledge on existing system of management is, therefore, based on a survey and analysis of the actual state of this system and it should include:

- collection and analysis of the available material concerning managerial activities from the viewpoint of data and information processing /at the level of the Ministry of Education and universities/, with respect to internal and external linkage;
- formulation of rationalisation possibilities of managerial activities under conditions of utilisation of computer technology;

- description of work activities of managerial formations and a survey of standards and regulations used by these formations in their decision-making activity, as well as a survey of basic procedures used in the treatment of input materials for documentation purposes, or of output materials for decision-making and planning purposes.

The definition of the ASM in the apparatus of the Ministry of Education, representing the top ASM in the area of education, will include:

- description of the structure and flows of information within the framework of the real system of management as well as description of interconnections with the subordinated ASM and with the nationwide systems;
- elaboration of a complex of managerial tasks of the Ministry of Education, derived from the objectives formulated by pertinent departments of the Ministry and their subdivision into delimited functional areas of management;
- elaboration of the structure of management levels, their functions with respect to outlined objectives representing sets of managerial tasks, as well as a description of sets of tasks that may and those that may not be automatized;
- identification of perspective tasks related to the management of education sector, the solution of which will contribute to the rationalization of management.

A similar procedure will be used to define the standard model of the ASM of universities and ASM model for methodical guidance of elementary and secondary schools.

The solution and organizational measures associated with subsequent phases of the ASM constitution - elaboration of technical and executive projects - are planned for the year 1980, along with the completion of the 1st variant of setting up an ASM in education. We assume that the top ASM will have, by that time, at its disposal a data bank and a set of programmes for routine processing of multiple information for the needs of planning and management. The standard model of university ASM will, from a functional point of view, include all the decisive work activities associated with the administration of a university lending themselves to elaboration of algorithms, and its individual components will be verified at various universities. A reference programme for its gradual introduction into all the schools of university-level in Czechoslovakia as well as the programme for its further development and improvement will be elaborated. The solution of the ASM model for the methodical guidance of elementary and secondary schools will reach the state of real cooperation and mutual interconnection of educational systems with the systems set up by national committees in the area of economic and administrative management of these schools.

SIGNIFICANCE AND MISSION OF INFORMATION SYSTEM ON TEACHER

Josef Pastier, Institute of Educational Information of the Ministry of Education of the Slovak Socialist Republic, Bratislava

In his report RSDr. Július Lihocký has justly pointed to the need for comprehensive information oriented to the purposeful improvement of educational process at any level of education and at all types of schools.

A specific, irreplaceable position and mission in the educational process belong to the teacher. The decisive portion of educational information which is subject of our colloquium is therefore directed, in a modified form, to the teacher.

The difficult work of the teacher requires appropriately arranged information on achievements reached in individual scientific disciplines to be then used in the process of teaching, along with information concerning psychology and pedagogy, more particularly, didactics of school subjects. Of great importance, for the management of education is, besides information necessary for the teacher, also information on teachers themselves.

The information system on teachers and educationalists constitutes an organic component of the unified information system of elementary and secondary schools, the project for which is presently in progress.

This system will include a unified registration of teachers, based, in our conditions, on the unified registration of workers. It will contain predetermined identification characters as well as variable data changing in connection with the complicated process of increasing one's qualification as a result of accumulated years of service and of the system of lifelong education as such. Data taken over from the unified registration of workers and generally valid throughout the country, must be therefore extended and modified to include the teachers and educationalists so as to produce an adequate quantity of information necessary for the rationalisation of management in the area of educational process at elementary and secondary schools, both on the vertical and horizontal planes.

The information system on teachers and educationalists will be designed to meet the totality of needs associated with improvements in the management of personnel engaged in the educational activity in the basic organisational unit - the school;

- at the first level of management - department of education of the District National Committee;
- at the second level of management - department of education of the Regional National Committee;
- at the central level of management - Ministry of Education of the Czech and Slovak Socialist Republics.

The information system on teachers and educationists is pursuing, above all, the objective of a comprehensive rationalisation of planning in the area of management and organisation of work with teachers and educationists.

- The information system on teachers will become an important tool for a systematic improvement of the needs of teachers and other educators at elementary and secondary schools. The planning of the needs of teachers in quantitative and qualitative terms is very complex and calls for adequate information.
- It will supply necesrary information for the planning of needs concerning qualification structure of teachers and educators for the basic unit - the school, regional areas /districts and regions/ as well as for the needs of Ministries of Education in both national republics.
- The plan of needs of teachers and educators for elementary and secondary schools will make it possible to determine, on its basis, scientifically justified and objectively valid enrollment quota for secondary schools of education and colleges of education training teachers for elementary and secondary school in the long-term forecasts.
- The information system on teachers will make it possible to allocate realistically teachers in accordance with the needs of schools, districts and regions, to ensure that the movement of teachers corresponds to social requirements; at the same time, it will create optimal conditions for the organization and management of all the forms of continuing education, particularly lifelong education of workers in the area of education.

Such approach towards the constitution of the above information system on teachers of elementary and secondary schools is made possible as a result of planned, directed and in all of its dimensions promoted economic and social development of the society.

Thus far, the only problem to be solved on a world-wide scale is that of the shortage of teachers - not only in developing, but also in industralized countries. In our conditions, we are concerned not only with ensuring an adequate number of teachers, but also with permanent improvement of the qualification structure of teaching staff and with purposeful efforts at ensuring realistic capacities for teachers-training schools and creating optimal conditions for the lifelong education of teachers.

Nevertheless, complex problems related to the relative, and in some cases, also absolute shortage of teachers on the one hand and in isolated cases of absolute redundancy of teachers on the other hand, have to be given priority consideration.

It would be very useful, and from the viewpoint of the humanistic mission of the UNESCO even necessary, to set up an information system on teachers on an international scale that would enable using teacher resources to promote the development of education in economically less developed countries.

The Soviet economist, academician Strumilin, demonstrated in exact terms, that the simple fact of teaching an illiterate worker how to read and write resulted in the increase of productivity of his work by two and a half times.

It is easy to figure that the elimination of illiteracy on a world-wide scale would help millions of today's starving people to gain at least a subsistence wage.

In this respect the information system on teachers would contribute to allocate rationally teachers resources so as to do away with illiteracy in the world in the shortest possible time. All the socialist countries illustrate very convincingly the effectiveness of such purposeful struggle with illiteracy.

The problem of ensuring an adequate quantity of teachers has to be solved everywhere in the world so that the consideration might be given also to matters of improving the quality of teaching personnel and of life-long education of the teachers.

In our conditions, the information system on teachers and educators is being constituted so as to include, in addition to fixed /invariable data/ also changes having taken place in the qualification of teachers as a result of their life-long educational activity.

NORMATIVE ASPECTS IN THE CREATION OF INFORMATION SYSTEMS

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Since the first EDICO Colloquium, organised between November 26-29, 1974, in Prague by our Institute of Educational Information attached to the Ministry of Education of the Czech Socialist Republic, the creation of national systems of educational information has made substantial progress. I believe that the conclusions reached at the first colloquium continue to be valid. In my paper, therefore, I should like to deal with the problems closely related to the conclusions of the EDICO-1, being directly connected with their implementation. These are problems of normative aspects of the creation of information systems.

On the basis of existing experience and knowledge concerning the establishment of a sector information system of scientific, technological and economic information in the sphere of education, I shall attempt to illustrate the significance and some applications of normative aspects and of the norms applied in setting up an information system. I shall present certain problems being, in our opinion, appropriate for a normative solution and common to a number of countries.

Normative aspects in the constitution of an information system may be defined as a set of obligatory requirements or criteria that the system must fulfil in order to being able to perform its functions.

With respect to projects and implementators of the system, the above aspects perform the role of factors affecting the creation and the functions of the system, or the role of its predetermined objectives.

On the basis of experience accumulated during the process of setting up our sector system of scientific, technological and economic information in the area of education, normative aspects may be subdivided, according to individual dimensions of activity of the given information system, into three groups:

1. normative aspects related to the organization and management of the information system;
2. normative aspects related to the technical equipment of the information system;
3. normative aspects related to the system of information storage;
4. normative aspects related to the form, content and characteristics of the information output.

Normative aspects related to the organization and management of the information system are determined by two essential factors:

a/ organization of the educational system,

b/ global conception of the national system of scientific, technological and economic information.

In what way are the above factors projected into the organization and management of the sector system of scientific, technological and economic information in the area of education?

As you all know, the Czechoslovak Socialist Republic is a federal State, consisting of two national republics - the Czech one and the Slovak one. In spite of the fact that the constitutional statute of the Czechoslovak federation placed the responsibility for the management of education exclusively into the hands of individual republics and, consequently, central organs for the management of education exist only at the level of national republics without a federal representation, Czechoslovakia as a whole has a unified educational system with identical content of instruction at schools of all levels. Identical is also the organization and the management of the educational system in both republics. The area directly administred by the Ministry of Education covers schools of university level and scientific institutions with educational orientation. Schools and facilities of other type are managed directly by the organs having a territorial competence, namely: secondary schools and other establishments of the 2nd cycle - by regional national committees, elementary schools and educational establishments of the 1st cycle /i.e. for children up to 15 years of age/ by district national committees.

Another factor affecting, as I have mentioned earlier, normative aspects related to the organization and management of the educational system, is the global conception of the national system of scientific, technological and economic information.

As far as Czechoslovakia is concerned, this conception stems from the Czechoslovak unified system of scientific, technological, and economic information. The Czechoslovak system of scientific, technological and economic information is operated by the Federal Ministry for Technological and Investment Development. This system includes several sector information systems, one of them being the sector system of scientific, technological and economic information in the area of education. The responsibility for operating a given sector information system rests with the respective ministry. Sector information systems consist of three levels. From a methodical point of view, the system is managed by a sector information centre /ODIS/; this centre guides the subject oriented information centres /OBIS/ these providing guidance, in their turn, to basic information centres /ZIS/ in their respective fields.

Both of the above factors as well as resulting normative aspects had to be taken into consideration in working out the conception of the sector system of scientific, technological and economic information in the area of education. Individual normative aspects were projected into this conception in the following way:

1. The sector system of scientific, technological and economic information in the area of education is unified and has a nationwide competence.
2. The system is made up by three subsystems: administrative, processing, distributional.

   a/ The administrative subsystem consists of

   - the two Ministries of Education, each of them being responsible for that portion of the sector system that falls under its respective sphere of competence;
   - the Prague Institute of Educational Information atta-

ched to the Ministry of Education of the Czech Socialist Republic, performing the function of sector information centre, was assigned, by the agreement of Ministers of Education of the two republics, the central competence in carrying out coordinating and methodic functions as well as the role of the representative of entire sector system of scientific, technological and economic information in the area of education;

- the Bratislava Institute of Educational Information attached to the Ministry of Education of the Slovak Socialist Republic which, in accordance with the valid nationwide methods of teaching, executes coordinating and methodic functions with respect to those centres of the sector system of scientific, technological and economic information, falling under the sphere of competence of the Slovak Ministry of Education.

b/ The processing subsystem includes, in addition to the two above mentioned institutes of educational information, also other subject-oriented information centres, set up within institutions for scientific research and university level schools with educational orientation, falling under the sphere of competence of the two ministries. Individual centres focus their activity upon partial areas of the sector information sphere and within their respective specialization they perform the function of State guarantors for processing the above information. Thus, they also have a nationwide competence.

c/ The distributional subsystem involves regional pedagogical institutes and district pedagogical centres. These organisations were performing the function of in-job-training and methodical assistance to the teachers, namely: regional pedagogical institutes covered the schools of the 2nd cycle, district pedagogical centres the schools of the 1st cycle and kindergartens. The incorporation of these organizations into the sector information system does not abolish the above functions; on the contrary, it substantially improves the conditions for their fulfilment, by putting at their disposal considerably more sources and materials than before, enabling them thus to apply more readily scientific and technological achievements in the practice of education.

3. In view of the fact that regional pedagogical institutes and district pedagogical centres are administred by national committees, the activity of which is not thematically differentiated, the sector information system of scientific, technological and economic information is organized into two levels with independent components: sector information centre /ODIS/ - subject-oriented information centre /OBIS/ and sector information centre /ODIS/ - basic information centre /ZIS/.

As far as normative aspects of the technical equipment and of the form, content and characteristics of information outputs are concerned, they concentrate on ensuring the compatibility of the equipment and, with respect to the user, an optimal structure of the form and content of the information service furnished.

Among the above-mentioned normative aspects, a specific position is occupied by normative aspects of the system of information storage, or, normative aspects of selection language. Their specificity results from the fact that they have a decisive significance for the fulfilment of functions of the information system in the national framework, on the one hand, and in the area of international cooperation, on the other hand.

Normative aspects related to the organization and management of an information system are essential and extremely important only in the national framework. Normative aspects related to technical equipment and forms, content and characteristics of information outputs are important for improving services provided to users, but of no consequence to their existence. We can imagine an information system operating exclusively on the basis of manual information processing. However, it is not possible to imagine this system without an indexing language.

Of decisive importance here is the aspect of content. It is neither the character, nor the strength of the norm that counts, but solely its content, i.e. phenomena and facts it regulates.

This aspect unequivocally determines the character and orientation of all the norms regulating relationships within the information system and towards its environment. In the Czechoslovak sector system of scientific, technological and economic information in the area of education, the norms are used to regulate managerial relationships, provision of services, cooperation between individual centres, etc. It is assumed that they will be applied also to other areas of constitution and operation of the sector system requiring the use of normative aspects. This problem, in a specific form, arises again in connection with information classification, in solving the question of an indexing language.

Traditionally, the most common and normatively established system of information storage in the area of education is that of universal decimal classification /UDC/ - class 37 /as mentioned before by Ing. Kugler/. This system with precoordinated classification, however, appears to be inadequate both on the national and international scales in connection with the transition of information systems towards qualitatively higher forms of information services. This fact reflects primarily the growing importance of the work with non--traditional information funds which are not, as a rule, encompassed by the system of universal decimal classification.

In regulating normative aspects of these problems we take for the starting point the delimitation of communication lines of scientific and technological information in the area of education. This delimitation is conceived from its systems aspect and defined from three points of view: generally thematic, institutional, subject.

The above points of view made it possible to reflect, in the conception of classification all the aspects of education as well as organization and management of education in the same form in which they were projected into the content of information sources dealing with these problems. By taking all these points of view systematically into consideration, we arrived at an outline of the set of the following basic thematic fields of the thesaurus for the area of education /you have received their summary/:

1. Educational system, its social, political and ideological principles, organization, management and economy;
2. Theory, methodology and history of pedagogy;
3. Physical, psychic and social development of young people, its underlying conditions, diagnostics and vocational guidance;
4. Personnel of the educational system and its training;
5. Teaching technology and teaching aids;
6. Buidlings and facilities for educational system;
7. Preschool education /public/;
8. Instruction /in general/ and general education;
9. School and out-of-school education /Social and moral education, socialization. Family education. Out-of-school education of children and young people./;
10. Education of young people requiring special care;
11. Vocational schools;
12. University-level schools;
13. Adult education;
14. Language teaching;
15. Social-science teaching;
16. Mathematics teaching;
17. Natural-science teaching;
18. Esthetic education;
19. Physical education and civil defense;

20. Profession and technical science education /labour and polytechnic education/.

We informed our partners in the countries of the Council for Mutual Economic Assistance on the above structure of thematic areas of the thesaurus and presented it to the BIE. In working out this conception we took for the starting point the results obtained in the comparative analysis of our ideas with the existing thesauruses of the BIE and GDR and with the system of univeraal decimal classification in the class 37. We attempted to find possible linkages to assure compatibility between these classification systems. When comparing the thematic structuring of subjects in the area of education in our conditions we found out that in some cases the identity of contents is no greater than 1%, sometimes even less. /You were given also this table./ The greatest concurrence established was 33.8%. We believe that this fact is the result of differences in the wordstock of the natural language on which these classification systems are based on the one hand and of different conception, structure and traditions of educational systems of various countries determining the content of lexical units, on the other hand. In order to accomplish its functions in the national framework, an information system should take full account of the above specificities. This, however, objectively diminishes the ability of individual national classification systems, resting on the thesaurus, to mediate communication with similar information systems in other countries. In other words, when solving the question of international information exchange there exists an objective need for taking into consideration normative regulations of classification systems used in the national framework.

It is necessary to look for possible interconnections, linkages and compatibility of individual national classification systems. In our opinion, this problem consists in making clear what coverage should the classification system of educational information take and in delimiting its relationship to national specificities of classification in this area. We are familiar with a number of recommendations, norms, normatively technical regulations /in the national and international framework/ intended to regulate the procedure in setting up classification systems, and in structuring the thesauruses. We regret, however, that in our sphere there is not even a convention to provide a frame of reference for subject classification and interpretation of terms used in the coverage of national thesauruses which, in our judgment, is decisive for assuring the compatibility of classification of educational information on an international scale.

Therein we see the essential shortcoming of classification systems based on thesauruses in our sphere of activity and thus far, the information systems failed to exert a similar function as is the one effected in this area by the system of universal decimal classification - class 37. We are aware of the difficulties connected with seeking a common procedure; suffice it to consider the number of problems of terminological nature in education which are bound to arise. It will also be necessary to take into consideration the organization, management and contents of educational systems in individual countries, or disparities concerning conception and interpretation /a classical example is offered by the concept of education/. It is, therefore, all the more urgent for all the countries involved to agree on a unified conception and delimitation of terminological vocabularies containing basic concepts from the area of education as an inevitable prerequisite for the delimitation of all the aspects of normative regulation for systems of classified information. These are the conditions and prerequisites for the development of an international information exchange and mutual cooperation and, at the same time, also significant aspects of the development of functions accomplished by information systems in the area of education on a national and international scale.

In view of the significance of the above problems we recommend that the colloquium should focus its attention to questions related to normative aspects in setting up national information systems. With respect to the development of international cooperation we suggest for consideration a possibility of setting up a working commission whose task would consist in delimiting, from subject and scope point of view, the structure of elementary concepts used in the area of education. Glossaries of terms, worked out on a unified basis, should be then, in our opinion, discussed at the third EDICO colloquium, and eventually incorporated into basic descriptors of the thesauruses of participating countries.

In its long-term plan, the Institute of Educational Information attached to the Ministry of Education of the CSR in Prague, deals with the problems arising during the elaboration of the Czechoslovak variant of the indexing language for the educational system in the Czechoslovak Socialist Republic. We would therefore welcome an opportunity for more intensive international cooperation and for participation in the work of the group, in case the EDICO-2 recommends its establishment.

SUBJECT-ORIENTED INFORMATION CENTRE FOR PATHOPSYCHOLOGY AND SOCIAL PATHOLOGY AND ITS PLACE IN THE EDUCATIONAL INFORMATION SYSTEM

Lýdia Okruhlicová, Research Institute of Child Psychology and Pathopsychology, Bratislava

One of scientific disciplines helping the educational practice to accomplish its most intrinsic task - that of education of young generation - is psychology, undergoing in Czechoslovakia, thanks to optimal social conditions, a successful development. The proof is provided by the facts concerning the establishment of psychological institutions in the education sector, the number of psychologists working in the area of education - according to Kováč /3/ they represented in the mid-1960s up to 55,4 % - and the finding /2/ that the psychological literature enjoys a great interest from the part of pedagogues and is one of the most read. Our own research shows that during approximately 30 years of psychological research in Slovakia, up to 33 % of all effected psychological investigations concerned the problems of education. We, therefore, conclude that psychology has been and will be one of those sciences that will continue to furnish pedagogy with its scientific findings. This fact is taken into account also in setting up an information network in the area of education in Czechoslovakia which will involve also the establishment of specialized information centres. The fact that psychology was ascribed a special position in the framework of delimited topical areas of the above sector /5/, creates prerequisites for the constitution of information centres oriented towards psychological problems. One of them is the information centre of our Research Institute of Child Psychology and Pathopsychology in Bratislava, fulfilling the function of subject-oriented information centre, of a processing type, for pathopsychology and social pathology of children and young people with the nation-wide competence.

Allow me to present a brief information on the evolution of our centre of scientific information.

The centre was founded together with the Research Institute of Child Psychology and Pathopsychology in 1964 in Bratislava, as a part of this institute. In the first stage of its development it fulfilled the function of a basic information centre. After having gradually extended our information funds and owing to relatively good supply of domestic and foreign specialized periodicals, we started providing, by means of secondary documents, professional psychological information particularly to psychologists and pedagogues in practice. Since 1965 we publish, twice a year, a Bibliographical Bulletin, which is very popular with the users. The largest, as regards its extent and number of copies, was the bibliography concerning the world-wide production on psychological educational and vocational counselling having appeared in print over a 5-year period /Bibliography of literature on educational and vocational guidance and counselling: 1970/, published at the occasion of Bratislava meeting of experts held in 1970. The next Bibliographical Bulletin completes the above Bibliography, being limited to the selection of literature published during the last 5 years in European socialist countries.

I specifically list the above two secondary sources in view of the fact that their production entailed a certain form of international cooperation. We asked several psychological and information organisations abroad to supply us with bibliographical lists of their national psychological production. We addressed particularly those countries, the national and specialized bibliographies of which were not available. The results were satisfactory.

I mentioned just one type of our information activity which might be appropriate for international cooperation.

We greet with satisfaction the constitution of information network in the area of education on the national and international basis, as demonstrated also by this colloquium. We expect that an optimal specialization and systematic cooperation between information centres and national systems will create favourable conditions for a fruitful cooperation in differentiated collection, processing and reporting of relevant information to its potential users.

Similarly, as the research projects solved in our institute are oriented towards the investigation of psychological problems encountered in the educational practice, also our information centre occupies, in the framework of psychology, particularly psychology in education, a specific position as a subject-oriented information centre in two areas of applied psychology, namely:

a/ for the area of pathopsychology - i.e. we cover, from the information point of view, psychological findings concerning children and young people suffering from mental disorders, sensorial troubles, physically handicapped and somatically ill;

b/ for the area of social pathology - i.e. we cover, from the information point of view, psychological findings concerning children and young people with behavioural disorders and delinquent behaviour.

All the information processes associated with the above functions, are structured in continuity with the information activity of sector information centre and with specific co-operation between our centre and related information units within our own sector and those of other sectors carrying out psychological investigations.

Experience accumulated until now proves that a consistent information coverage of the entire sector, in our case also of the entire subject of psychology, has many advantages and represents another significant event in the rationalization of information activity which appears inevitable owing to the present rate of scientific and technological development. Allow me to express my belief that, on the basis of the results obtained, the cooperation in the information area of education will continue to develop also on an international scale and will contribute to the acceleration of information exchange in this area and, in this way, to the acceleration of the development of respective scientific disciplines.

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TRAINING OF TEACHERS - USERS OF SERVICES PROVIDED BY THE EDUCATIONAL INFORMATION SYSTEM IN THE FRAMEWORK OF THEIR LIFELONG EDUCATION

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In my brief account focusing on the problems related to the training of users of services offered by the educational information system, I should like to quote a noteworthy remark made by Mrs. Elin Ekman /Sweden/ who signalised, in her paper read to our colloquium, the concern for "not losing the man in the deluge of information".

I should like to briefly point out three problem areas, namely:

1. the training of teacher - user of educational information - to acquire skills necessary for his teaching profession,
2. the continuing education of teachers in relation to providing educational information service,
3. the differentiated orientation of individual centres of educational information in accordance with the teachers' needs.

My approach towards the solution of the above problems is based, inter alia, on the EDICO-1 proceedings.

In my paper presented at the EDICO-1 I reflected upon the necessity of setting up, testing and putting into operation an open system for training the teachers and other workers in education to use the system of educational information /1/.

I am glad to note, that, in Czechoslovakia, several projects suggested at that time are being gradually implemented.

If the study of future teachers at establishments for
teacher's training is conceived as the period of their basic
training, then the new conception of university-level study
based on the principles adopted with the perspective of fur-
ther development of the Czechoslovak educational system, im-
plies a substantial extension of the educational component of
teachers' training /particularly as regards future teachers
at the secondary schools/.

The new approach towards the education of teachers is em-
bodied in the very definition of the teacher's profile stipu-
lating, in addition to the need for "mastering theoretical prin-
ciples of respective subjects as scientific disciplines, in-
cluding the theory for their teaching", also the requirement
that the subjects should be "mastered at the level of latest
achievements of science and research in association with the
need and ability of the teacher for permanently updating and
completing acquired knowledge along with the achievements in
human understanding and social practice" /2/.

It is therefore assumed that the future teacher will fun-
ction as a permanent user of educational information. The que-
stion arises to what extent the basic pedagogical training sa-
tisfies the requirement for preparing the future teacher to
use the educational information service. The traditional ap-
proach in pedagogical training fulfils this requirement but
sporadically, varying, moreover, with the awareness of the lec-
turer.

The new conception of pedagogical and psychological dis-
ciplines provides ample space for the training of future users
of educational information. We have in mind the subject newly
introduced into the curricula, called "Introduction Into Tea-
ching", that aims at motivating the students for their future
profession, making them acquainted with specific features of
pedagogical practise and inducing them to self-education, con-
ceived as the building up of the structure of educational abi-

lities as well as shaping of their own personality and lifestyle.

Already at this point may the future teacher, at the very beginning of his university education, be oriented towards lifelong use of the system of educational information.

The second pedagogical subject, included into the curriculum for the second semester, is called "General and Comparative Pedagogics". It will immediately introduce the future teacher to basic information concerning school systems in the world, their comparison and activities and significance of international organizations and documentation centres in the area of education. Both the above discipline are conceived so as to be mutually complementary and in the annotation of their syllabuses the stress is laid upon a non-traditional approach in their teaching.

The curriculum for higher years of study includes, besides traditional subjects such as theory of education, recently conceived subject of school administration and management, also a new subject, in which the future teachers will deal, in a seminar form, with the "Latest developments in pedagogical and psychological sciences". We expect this subject to acquaint immediately the future teachers with the use of educational information system. It will involve not only information of national interest or information published in the mother language of the students, but with respect to their previous compulsory language training /minimum requirement includes a passive knowledge of Russian and of another of the UNESCO working languages, or German/ also information materials published in foreign languages.

The above conception appears to have good outlooks; however, it will have to be continuously elaborated with respect to its content and methods and the university teaching staff will have to be trained to apply it in practice /in this context we have in mind an adequate quantity of information material for teaching the above subjects along with language manuals oriented to professional pedagogical matters/.

2. The document entitled "On the Further Development of the Czechoslovak System of Education" presents a detailed proposition for setting up the system of continuous skill improvements of teachers. This system includes courses following the completion of the secondary-level study /the majority of personnel involved in the preschool education still receive a secondary-level education/ and post-graduate study in the case of university-trained personnel, functional and cyclic courses for managerial workers, ideological and political education and various other forms designed to prepare the teachers to introduce the new conception of education into schools of all levels and types /3/.

In the first stage of the above system, immediately following the completion of pedagogical training and fulfilling primarily an adapting function, the teacher, at the start of his career, should learn about practical utilisation of the educational information system in the school activities. This demanding task will be accomplished by the so-called "initiating teachers" who, against the background of their own extensive experience and pedagogical activity will encourage the young teacher to make the habit of using the educational information system.

The second stage of the continuing education of pedagogical personnel fulfils primarily an innovative role. In its framework the teachers will be informed on the latest developments in their respective subjects and methods, on achievements of pedagogy and psychology. Within this stage the teacher will be more thoroughly acquainted with the educational information system, particularly by means of those achievements of pedagogical science attained in the period having elapsed since he had completed his studies. The teacher will then learn all possibilities of application of the given system at its individual levels. The content of this stage has been presently worked out and first of its variants are already subject to practical verification at certain faculties.

The third stage of continuing education of educational staff performs a specializing role - it focuses on the execution of specialized function in the area of administration of schools and educational establishments, or of specialised pedagogical functions such as educational consultants, etc. The testing of several of its forms is in progress, for example, in the framework of functional courses organized for the school directors at the level of regional institutes of education. The syllabus for a course of this type includes the topic "Information and information systems in the management of education", drawing also upon the conclusions reached by the EDICO-1.

The project for setting up the system of educational information centres was the outcome of research activity carried out by a problem-solving team of the Bratislava Institute of Educational Information, lead by Dr. J. Lihocký, as may be seen in its final report /4/. This report, on the basis of a broadly conceived investigation and assessment of the situation in educational information flows, outlines the system of educational information centres in our country, built in a unified, comprehensive and integrated manner. The system of gradually established educational information centres will in practice have to be differentiated into individual fields in accordance with interests and needs of users of its services. In this respect we might draw upon experience concerning setting up and operating national information centres, as followed already from the EDICO-1 proceedings. By way of example I should like to mention the contribution of R. Todorova /Bulgaria/ /5/, or conclusions from the survey of users of educational information in Czechoslovakia /6/. Mention should be made also of the contribution of G. Lazarescu /Rumania/, stressing the need for examination and training of habits related to using educational information /7/ and that of G. Gran /Sweden/ saying that the "purpose of an information system is to enable the user gaining access to the information he needs" /8/. We must mention also the demand expressed by N. Koch /Federal Republic of Germany/ "to familiarize everybody with possibilities offered by technical services and general information systems needed for one's own education" /9/.

The fact of my paper being included into today's agenda allows me to refer to some of the views expressed by those preceding me, for example to the requirement postulated by V. Arensky from the Moscow Institute of General Pedagogics to focus the attention, in setting up educational information systems, also on arousing the interest of the user in educational information or ideas put forth by Professor O. Kyöstiö, Director of Finland Institute for Educational Research and remarkable contributions of V. Mirtcheva from the Sofia Institute for Pedagogical Research and R. Vandevelde, General Inspector of Belgian schools, both stressing the necessity of knowing the interests of the users as implied by their activities.

On the basis of these views and of our own modest investigation effected in the area of post-graduate study for teachers at Palacký University of Olomouc we came to the conclusion that the differentiated orientation of individual centres should take the following forms:

- at the level of district educational centres, the relevant problems should be oriented particularly to methodical questions; thus, they should include data on pupils, sets of methodical procedures, problems and tasks to be solved, along with technical lay-out including sophisticated teaching technology and materials /figures, schemes, slides, instructive and methodical films, tape recordings, videorecordings or school television programmes, etc./

- at the level of regional pedagogical institutes, in addition to more advanced methodically oriented materials, the stress should be laid on the information concerning the management of educational process at the class, and eventually district level. If needed, they should include also information of a more general character on latest developments in the fields of pedagogy and psychology, information on the development of educational activities in the given region, etc.

- teachers-training schools, both in the basic phase and in that of post-secondary level or post-graduate /university/ level, should function as information centres for providing information on specific achievements of educational science, comparative studies in the area of education on the national and international scale, and for supplying necessary data on situation in and effectiveness of teachers' training, their incorporation into practical activity and on methodical materials from the field of advanced pedagogy, etc.

- central institutes of educational information should in cooperation with sector central institutions for training educational personnel complement their extensive publication activity with a more efficient publicity concerning the educational information system and on the basis of a firm conception of international cooperation they should create prerequisites for high-quality functioning of all the rest of educational information centres supplying them with necessary methodical instructions.

To conclude, I feel entitled to note that during the last period we have in Czechoslovakia succeeded in focusing the attention of persons concerned with education to the problems associated with setting up and operating an information system in the area of education. The basic information on the above problems, presented at the nationwide conference of the Pedagogical Society of the Czechoslovak Academy of Science, held towards the end of 1976, had thus provoked a considerable interest. The Main Committee of this scientific society recommended at its session to educational workers to solve questions related to constituting and using the system of educational information in their respective research and publication efforts. The concentration of research activities of almost 200 workers, in the period 1976-1980, for example on the problems in lifelong education of pedagogical personnel /sector project of the Ministry of Education: RS-11/ constitutes one of the ways of implementing this recommendation and contributes to working out a promising conception for training educators to use the educational information system.

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EDUCATIONAL INFORMATION AND THE UNIFIED SYSTEM OF SCIENTIFIC, TECHNOLOGICAL AND ECONOMIC INFORMATION

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Allow me to express, on behalf of organizations responsible for the management of the Czechoslovak system of scientific and technological information - the Federal Ministry for Technological and Investment Development and the Ministry of Construction and Technology of the Slovak Socialist Republic - our appreciation of proceedings and outcomes of the EDICO-2 colloquium held in Bratislava, the capital of the Slovak Socialist Republic.

It has been repeatedly emphasized in the discussions at this colloquium that scientific and technological information for the area of education constitutes an integral part of the overall system of scientific and technological information - in Czechoslovakia as well as in other participating countries and on the international scale. Consequently, conclusions of the present colloquium, oriented towards the international cooperation in information exchange and towards gradual constitution of information network or even information system for the area of education have general validity and might have positive implications for our entire system of scientific and technological information.

The Czechoslovak Socialist Republic pays considerable attention to scientific and technological development constituting, in our conditions, the main source of overall economic and social development. Our research and development base comprising more than 165 thousand workers, to which the State devotes approximately 3,8 % of the national income is, as regards its scope and achievements, comparable to those of other industrially developed countries. One of the prerequisites for the development of science and technology is a well developed and operational system of scientific and technological information; in Czechoslovakia, it employs more than 10 thousand workers and its economic effect is estimated to represent about 1.3 milliard Czechoslovak crowns per year. The application of scientific, technological and economic achievements does not result, however, exclusively in direct economic benefits. It has also broader social implications reflected primarily in the improvement of workers' skill level, in their lifelong education, all this significantly affecting the situation of an individual in the production process and society. It is in this respect that questions related to scientific and technological information enter into close relationships with those related to education. It is well-known, and it has been stressed repeatedly in the proceedings of this colloquium, that the overall development of our system of scientific and technological information is summed up into a State priority programme for the information policy in the area of scientific and technological development, represented by a set of State projects, each of them focused on a key section of the above system. These key projects include the project for developing the educational information system, solved by the Prague and Bratislava Institutes of Educational Information.

When assessing the relationship of scientific information system in education with the overall system of scientific and technological information, we should not underestimate the existence of multidisciplinary relationships arising between professional information from various scientific disciplines, fields of technology and of human and social sciences on the one hand, and educational information on the other hand, in educational information centres, libraries, particularly at universities. We should therefore appreciate if the outcomes of the present colloquium contribute towards reinforcing these multidisciplinary relationships, without which the unity of scientific and technological information system in Czechoslovakia would be unconceivable.

Our organs - the Federal Council for Scientific and Technological Information and the Slovak and Czech Committees for Scientific and Technological Information - will not only thoroughly evaluate the conclusions reached at the present colloquium, but will also apply them in order to promote the development of our scientific and technological information system. Special consideration will be given to the application of the EDICO-2 outcomes in the area of training the workers to operate the scientific and technological information system. It needs not to be stressed that the present colloquium, tying in on significant international documents, primarily on the Final Act of the Helsinki Conference on Security and Cooperation in Europe, and on the significant activities by UNESCO and its organs will result in stimulating also other international relationships in the area of scientific and technological information.

From this aspect I highly appreciate proceedings and outcomes of the EDICO-2, and wish to thank its participants for their stimulating and constructive contributions and to express our thanks also to the UNESCO and UNESCO-BIE representatives. I should also like to ask the organizers - the Czech and Slovak Ministries of Education and the Bratislava Institute of Educational Information - to help us utilizing the positive results reached at this colloquium for the development of the Czechoslovak scientific and technological information system and for peaceful international cooperation in this sphere.

ON PROBLEMS RELATED TO OPTIMIZATION OF INFORMATION SERVICES IN EDUCATION

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Needs for improving the efficiency of information services offered to outstanding specialists in the field of education administration and that of educational research imply the necessity for seeking effective ways to optimise the production of information. The core of the problem consists in ensuring the minimum necessary flow of innovative information both as regards its content and quantity, so that the user might apply it, purposefully and effectively, in his main line of activity. The evolution of various information systems is associated with the risk of "flooding" the user with an excessive quantity of information without providing for its adequate selection, reduction and form corresponding to the actual specific need. On the other hand, the slowdown of the process of setting up rationally organised information systems, or even the impossibility of the potential user to avail himself of their service, increases the danger that he will be lacking information necessary for his work.

This problem is solved in the framework of the project for setting up the sector system of scientific, technological and economic information in the area of education, set forth in the State research project for the sixth Five-Year Plan period. Its substance corresponds to the subject of research subproject called "Optimisation of information outputs for managerial and research workers". This line of research is based on the assumption that the optimisation of information production for any given component of the specific population of users is affected essentially by three basic moments. These include, in the first place, the structure of subjects and forms related to the needs of users. Second, it is the present stage and evolution of information store and finally, the information system as mediator between this store and the population of users, its capacity and ability to use it to meet the minimum information requirements of concrete users. We believe that unless the designer of an information system gains a thorough insight into these three basic moments, he will not be able to attain their adequate equilibrium, to ensure the continuity of information flows and to make the relevant stores accessible to specific users.

The above interpretation of the problem provides the starting point for the optimisation efforts. In their first phase we therefore fully concentrate on the above three moments. At the present period we make an analysis of the existing situation and of expected evolution of information requirements in the area of education administration and that of educational research. We decided to utilise modified forms of the Delphi method. The work itself is carried out by a team consisting of almost thirty experts in the area of education administration, research and pedagogical workers and specialists in the field of information science. We assume that the findings from their investigation should be summed up by the end of this year /1977/, so that they could contribute to establishing expected tendencies of development in the area of information needs for the entire set of users of scientific and technological information from top and middle levels of management and for research workers representing the educational research base. We expect that we shall be able to reduce substantially the "over-feeding" of these users with an excessive amount of irrelevant information on the one hand and significantly alleviate the lack of this information for those who rely on it for their work on the other hand.

The analytical phase of our investigation includes also a systems analysis to examine the capacity of all the centres making up our sector system of scientific and technological information. We decided to utilise the method of systems collection of basic data on factors affecting the mobility of the capacity of a given system /and its elements/ both as regards the input of primary information into the system of scientific and technological information in our field, and the processing of secondary information and its further transformation, selection and aggregation into information outputs, which are of topical interest for our users and inevitable for the school system to carry out its functions. Data and their collection will be concentrated so as to permit to use them, by means of an appropriate computer programme, to simulate the behaviour of the entire system of scientific and technological information and that of its components, in various variants and different time series. This analysis and simulation - modelling of variants of system behaviour - will help determine such proportions of capacities of the system to be able respond most flexibly to changing requirements of the users.

With respect to the third moment - analysis of stores - our investigation will take up the findings established during the solution of the subproject "Profiling of stores in education", constituting an integral part of the project for setting up the sector information system; its completion is planned to coincide with that of the analytical phase of the project of optimisation.

The optimisation subproject contains one specific objective consisting in working out methodic recommendations for the establishment of optimal scope and structure of information outputs, presenting suggestions for their codification in longterm perspective; reducing redundant and inadequate outputs and making better use of existing capacities, in order to satisfy primarily the users in the area of education and to promote the educational research in Czechoslovakia.

PROCESSING OF SOCIO-ECONOMIC INFORMATION FOR THE NEEDS OF THE MANAGEMENT OF THE SCHOOL SYSTEM

Ignác Brodňan, Pedagogical Research Institute, Bratislava

In connection with the materialization of the conception of computing technique at secondary shools in the Slovak Socialist Republic, the technical secondary schools of electrotechnics train in addition to other specialists also technicians - specialists in electronics for the maintenance of computing technique /field of study Computing and Control Systems/.

The utilization of the computers and the work with technical and economic information enables the achievement of better results at secondary schools.

The changes in the forces of production have brought about by new scientific and technical development, have influenced and changed gradually the requirements regarding the structure and training of specialists having secondary vocational education. In the following years specialists with secondary education will be used in the field of management and production preparation, i.e. at such posts requiring high qualification because of the complicated techniques used. The current curricula of secondary schools do not correspond fully to these exacting requirements, because they do not respect the already achieved level of the development of our society, science and technology.

The basis for the successful functioning and utilisation of computing equipment is, along with material prerequisites, also the work of a great number of specialists of most diverse vocations whose knowledge and abilities will contribute to optimum utilisation of these techniques. The training of such specialists is one of the key tasks of our school system.

For these reasons, there have been built three computing centres at secondary technical schools in Slovakia, equipped with JSEP 1021 medium-sized computers of the third generation. Each region has one computing centre. The instruction in the field of study is presented from the viewpoint of contents in such a way that the students should acquire the necessary practice concerning the operation and maintenance of the computer, so that they should have sufficient theoretical knowledge enabling them after their graduation and after obtaining the corresponding training to master also more exacting work in the field of computing technique. In connection with the utilisation of computers situated in the regional school computing centres of the corresponding regional national committees /departments of education/, in the following stages it is necessary to rely upon their application to processing social and economic information, necessary for management, planning and prognosis with regard to the school system, for the managing educational bodies, to create out of them methodic and co-ordination centres for the collection, processing, selection, storage, and individually-directed distribution of certain educational information.

Such a processing would ensure in the first phase better utilisation of these very expensive computers of the third generation, and consequently not only their use in the educational process, but also in another sphere - in the processing of socio-economic information, for the collection, processing and storage of certain educational information.

In the following stage, characterised by the creation of the national information centre, all the above-mentioned activities would be taken over by a corresponding centre assigned for educational information.

The above project can be realised in concrete conditions of the Slovak Socialist Republic.

THE UNIFORM REGISTRATION OF PUPILS FROM THE POINT OF VIEW OF A PEDIATRICIAN - AN ADOLESCENTS' DOCTOR

Josef Černay - A. Lacko, Educational Research Laboratory, VÚRCH, Bratislava

The uniform registration of pupils /URP/, an example of which you saw yesterday, requires from the educationalists a lot of information, but it would be incomplete without the information on the state of the child's health. The state of health is the consequence not only of genetic inheritance, but also, to a great extent, of acquired characteristics and environmental influences. That is why we do not neglect this aspect in the URP, elaborated in cooperation with physicians. It has been proved that the relations among various indicators influence more or less the state of health, or the other way round, that the state of health of pupils influences the results of the educational process.

We have tried to meet the demands raised by machine processing of such an extent of data sufficient for the evaluation of the state of health, not only from the view point of the child itself, but also from the broader aspects of the family, personal history and characteristics of the development. All these aspects serve for the evaluation of the overall state of health, with regard to the professional interests of the child and, at the same time, they take into account the requirements of a certain profession as to the health characteristics of an individual. It has been proved that the extent is sufficient both for medical officers and educationalists.

The first results have shown that some health characteristics, as are the results at school or the overall mental development of the child, are, to a great extent, related to the effects of the educational process. Some other characteristics are only vaguely related to these effects. It will be necessary to try to find positive relationships among them, but also those which will be found unsuitable. That is why, from the viewpoint of physicians, the URP will be of importance, not only for individual diagnostics, but also for collective diagnostics of the whole groups of pupils. And what is even more important, the URP will have its preventive prognostic impact, because it will signal unsuitable relationships, which will have to be removed in due time in order to prevent their fixation.

Our work encompassing 5082 pupils has shown, that we are able to set up, on the one hand, dispensary groups of the ill according to the disease and, on the other hand, also according to the patients, to gather statistical data, growth curves of the individuals and groups, to determine the fitness from the view of vocational classification of children, and to plan vocations according to the changed working ability. This work is at its very beginning and that is why it will require some modifications both during the collection of the data and the evaluation and analysis of the results obtained.

THE CREATION OF THE COMPUTER SYSTEM WITH REGARD TO THE AUTOMATED INFORMATION MANAGEMENT SYSTEM

Aurel Ducko, University Institute of Computing Technique,
Bratislava

The information science of the contemporary scientific and technical epoch, along with the application of automation, is a comparatively young scientific branch. Particularly the tertiary sphere, to which education belongs, is covered theoretically only in part, and up to the present there is also very little practical experience.

Practical solution to the problems of the development of informatics, on a modern scientific and technical basis, requires to proceed in practice from uniform definitions of connotations and denotations and characteristics of the system, which has not been exactly defined until now.

The system of information in education represents a collection of information components, i.e. institutional information activities of the managing organs, schools, scientific institutes, libraries, information centres, etc., and information elements, or means constituting a well-ordered unit, resulting in the systematic creation, collection, evaluation, mediation, and utilization of information in education.

We may say that the objective of the information system in education is to facilitate the continuous flow of the communication process in such a way to render the optimum information to the users, in the form of maximally objective, selected and available information necessary for the scientific and rational management of the educational system and process.

The scientific and rational management of the educational system and process requires the promotion of the system of information to the managerial system of information, already comprising not only the components of planning, analysis and control, but also the component of decision making.

Naturally - the creation, evaluation, analysis, processing, and prompt transfer of information is not possible without the application of automation and its other appurtenant technical devices.

Theoretically, the whole automated managerial system of information can be devided into three spheres:

- sphere of the creation of information,
- sphere of the processing of information,
- sphere of the utilisation of information.

When employing the computer as an automated device in the computerised managerial system of information in education, we have to take into account, or to proceed from the requirements of all three spheres, the second one, i.e. the processing of information being underscored.

The information system of the educational system is elaborated in the vertical as well as in the horizontal lines of the basic information units at the level of primary schools of the first and the second stage /the so-called schools of the first and the second cycle/, vocational schools /of the district, region/, universities, directly managed organizations, at the level of the subject-oriented information centres and the specific educational information system.

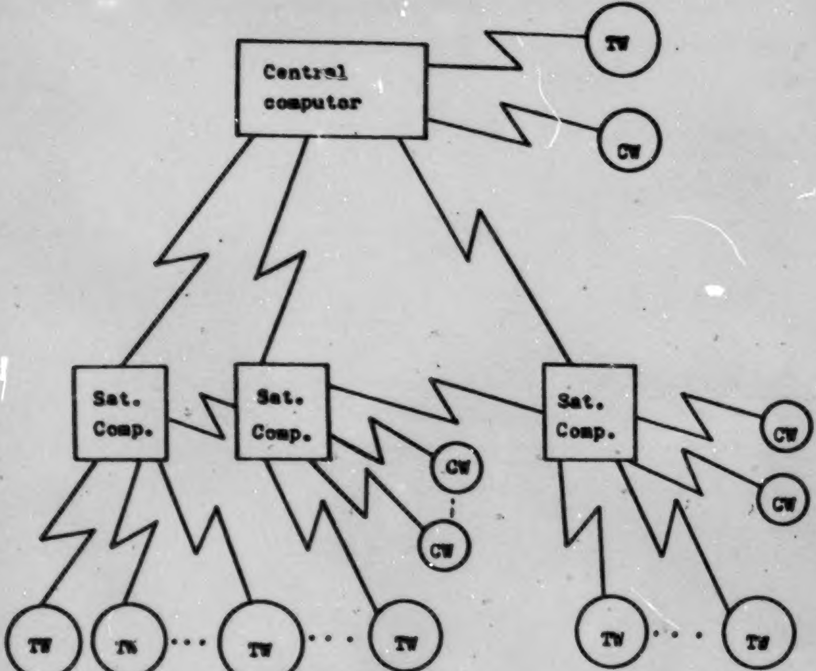
Proceeding from the flow of information and fundamental information units, and at the same time respecting their vertical and horizontal positions, the technical provision of the automated information system of management has to be conceived in a systems manner, and in a hierarchical arrangement.

The computing technique, employed in a systems manner in a hierarchical arrangement, has to conform to all the requirements and criteria of the information system with appropriate reserve for the preparation of input data, for the creation of the data bank, the flow of data, their accessibility, as well as the speed of processing and the speed of transfer.

The hierarchical arrangement of the computing technique presumes the creation of the terminal and the computer network which must cover all the fields of the information system of management.

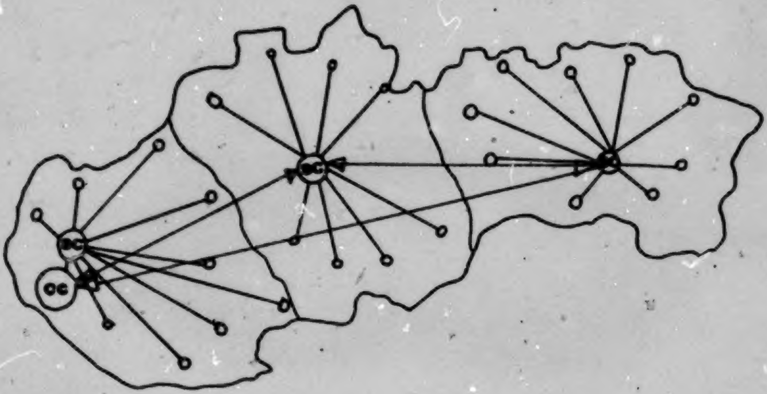
The hierarchical arrangement of the terminal and computer network proceeds from the lowest stages, i.e. console and terminal workplaces, which are connected through the satellite computers with the control computer, while fully respecting both the supplier and the recipient of information, their requirements as well as their limitations.

Diagrammatic representation of the terminal and computer network:



Central computer
TW
CW
Sat. Comp.
Sat. Comp.
Sat. Comp.
CW
CW
CW
CW
TW
TW
TW
TW
TW
TW

Diagrammatic representation of the territorial coverage of the whole field of education with the help of the terminal and computer network:



The interconnection of the technical devices, and consequently of the whole automated information system of management, starting from the primary schools of the first stage and the second stage /the so-called schools of the first and the second cycle/, vocational schools, universities, organizations, up to the very top authority, will enable a highly rationalized work with information.

The thus arranged computing technique, with appropriate stand-by technical devices will enable its utilization, not only in the automated information system of management, but also in the field of the educational process, offering the possibility of creating special class-rooms, primarily at the universities and in vocational secondary schools.

One of the essential presumptions of improving the system of management is the question of rapid transfer of scientific and technical progress to all activities of the social life. In this sense the fundamental mastering of the set tasks compels us to rapid introduction and consistent application of the computing technique to the educational system - to its management, as well as to the educational process, i.e. to those spheres which substantially influence the successful fulfilment of the target in all spheres of the national economy.

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PROFILING OF HOLDINGS AND PROBLEMS WITH FILE ARRANGEMENT SYSTEMS IN THE FIELDS OF EDUCATION, INSTRUCTION AND PEDAGOGICAL SCIENCES

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The objective of all activities in the field of scientific and technical information is the social utilisation of its results, i.e. the conception of the user being the starting point of the whole information process. The users in the fields of education, instruction and pedagogical sciences are classified into these essential categories:

1. officials of all types and levels of educational facilities within and without the department of education,

2. officials of the managerial bodies in the department of education, including Divisions of Education at the National Committees,

3. people engaged in the research and development basis of the educational system,

4. officials in the governmental and Party bodies, and in bodies of social organisations, engaged in questions of education, instruction and pedagogical sciences.

This differentiation is only of a general orientative character. Gradually with building up the Czechoslovak statewide educational subject-oriented system, it will have to be complemented and more clearly differentiated, so as to reflect more flexibly the specific information requirements of concrete groups of users. The criterion of this more profound differentiation will be first of all the situation of the user with respect to the educational system and its surroundings, user's content specialisation of his professional education, his institutional and subject specialisation.

The source of scientific and technical information, and the object of their availability to the user are the information sources. The information holdings constitute a basis for furnishing any kind of information services, their building up being a complex and a long-term process. The fundamental precondition which is necessary in order that all types of libraries in the department of education should extend their information services, is to accumulate purposefully the necessary information sources. Lest this process should be uncontrolled, it necessitates, first of all, the creation of desirable profiles of holdings, the structure of which is characterised by the contents, form and by the proportion of individual functional constituents of holdings, from which other holdings differ by their contents, form and the proportion of constituents in other facilities of the system of libraries and information centres in the field of education in the C.S.S.R.

With regard to the task of the educational information centres that are to serve the requirements of their users the purposeful profiling of holdings is of importance. Basically, this is determined by the development of the subject profile of holdings, by the structure of their professional specialisation, by the comprehensiveness of the standard profiles of holdings, and the structure of various sorts of information sources, constituting the complex system of all holding units. The development of science and technology and also the practice connected with users of holdings tend towards ever more narrow specialisation. This influences, too, the more exact determination of specific aspects of holding profiles. The decisive factor of the purposeful profiling of holdings in the field of education, is the task of the subject in the management of the formation process of holding profiles in the sphere of education, and also of the subjects of management of the holding profiling separately in every single unit of the network. This subject is the Institute, the organisational component of which is also the central library of the branches, the plan of its methodical activities and, at the same time, its perspective objectives of work in the sphere of holdings to be shared by individual libraries, having their new functions, assigned to them after the establishment of a three-stage system of educational information centres. The solution of this task envisages the building up of the following information units:

1. Sector, management, coordination and methodical centre /Sector Documentation and Information Centre having a state-wide sphere of activity/;

2. Subject-oriented information centres on the basis of scientific and university libraries and documentation centres in the units directly managed by the Ministry of Education of the C.S.R. and the Ministry of Education of the S.S.R., where there are conditions for mastering processing functions;

3. Centres at the level of National Committees, at the regional educational institutes and the district educational centres, where there are preconditions for the fulfilment of distribution tasks.

From this viewpoint the profiling of library holdings is a complex process, tying in on the constitution of a network of information centres and, at the same time, it is one of the fundamental prerequisites of the potential internal division of labour among them, while fully respecting the functional aspects of the centres /libraries of the network/, ensuring the utilisation of holdings by users of the scientific and technical information in the educational system in the C.S.S.R.

As regards the profiling of holdings, their contents, topics, which are of dynamic and changeable character, and independent only from the subjectivity of the user, are the most important ones. The profile of holdings must especially satisfy first of all the changing requirements of users as far as the contents of the topics, and the forms of information carriers are concerned.

The synthetic indicators of the contents and forms of the profile of holdings will be namely:

- the topical profile of holdings in various information units of the system being built in the field of education has to respect first of all the topical, institutional and content areas of scientific and educational information in the holdings of sector and subject-oriented information centres,

- the standard profile of the library holdings should be concentrated on scientific, professional and methodical literature,

- the generic profile of holdings should maintain, in addition to the traditional sorts of sources, also holdings from all necessary sorts of sources of scientific, technical and economic information, mostly official documents, research reports, defended dissertations, travel reports, translations of specialized literature, and educate the users of information, teach them how to use new sorts of information carriers, for instance microfiche or the outputs of machine systems,

- the provenance profile of the library holdings must collect in a relative completeness the Czechoslovak specialised educational literature, a wide selection of literature from other socialist countries, as far as the literature bought for foreign currency is concerned - a selection harmonising with the departmental coordinated acquisition, to intensify the international exchange of publications, mainly with the institutions of the member countries of the C.M.E.A. and UNESCO.

In the framework of building up the sector system in the field of education, the profiling of the library holdings is classified as an individual partial task, it is being solved in the 1976-1978 period, and its final form will lead to the determination of principles for the acquisition policy regarding all the levels of the sector system being built in the educational field, to the determination of principles of methodology of the creation of holdings at various functional levels of the sector system in the educational field, in accordance with the information requirements of principal groups of users of scientific and technical information in the Czechoslovak educational system.

A significant component of the objectives of creating the sector system in education is the solution of the indexing system. In the system of scientific, technical and economic information there exists at present a number of various indexing and selective systems, valid on the subject-oriented, sector and international scale. This task is being solved as an individual partial task: the Czechoslovak version of the indexing language in the field of education in the years 1976-1980, its objective being the creation of a system with an intellectual indexing of the input educational documents, based upon the Thesaurus for the fields of education, instruction and pedagogical sciences. Presuming that this stage will be successfully completed, there will be created conditions for the development of an automated information system of scientific and technical information, on the basis of modern technology with computerized indexing and directed information services. The initial analyses of the conditions and preconditions of the solution of problems regarding a selective language in the field of education and instruction in conditions of the C.S.S.R. indicate in principle two realistic approaches to the solution:

- to proceed from solutions that are already applied to and utilised in practice in other information systems of the same topical specialisation as the future Czechoslovak sector information system of scientific and technical information,

- to attempt at an original solution, conceived in a manner enabling the integration within the Czechoslovak system of scientific and technical information as well as within the international framework, primarily with the C.M.E.A. member countries.

We orient our efforts towards the experiment with the original solution. At the same time, we proceed from the fact that the selective systems of descriptor type, already used in practice, differ principally from the topical rango considered by us. Our conception concerning the educational sector stresses very clearly the content, institutional and subject viewpoints, and it covers completely the system-oriented structure of communications of scientific and educational information. None of the thesauri used in other systems all over the world is in accordance with this complex conception. They either surpass the framework of the sphere or they stress other aspects than the scientific and educational ones. Naturally, the orientation towards an original solution brings along numerous hazards, which could be reduced only by virtue of the participation of an extensive team of specialists - pedagogues as well as other experts in the whole country, and ultimately also some specialists from the C.M.E.A. member countries working together and trying to find the solution.

We have divided the solution of problems concerning the elaboration of a thesaurus by the year 1980 and also perspectively for the succeeding years into 4 partial tasks:

- Delimination of the topical range of the thesaurus and its fields of topics. The objective of this stage is to analyse the accessible thesauri, and to elaborate the limits of the educational field from the viewpoint of the structure of the future system, users and their possible requirements concerning the system.

- Selection and elaboration of lexical units for the Czechoslovak version of the indexing language. The objective of this stage is the excerption of notions and terms from the subjects of the topical range of education from original sources, the collection of the sets of retrieval requirements and their excerption and other background materials, for instance the excerptions from the subject catalogue and MDT-37, inclusive of the data on the interpretational relations among the individual lexical units and the data on their anticipated relevance.

- Elaboration of a dictionary of the indexing language for the educational subjects. The objective is to define the lexical units /descriptors/ of the future thesaurus and to delimitate paradigmatic syntagmatic relations among descriptors and to generate a working version of the educational thesaurus.

- The verification of the working version of the thesaurus and its evaluation /from the beginning of the year 1979-to the third quarter of 1980/. To prepare the experimental verification of the working version of the thesaurus on a concrete sample of several thousands of documents with the participation of people employed in the centres of the system. The evaluation of results of the experiment and the definitive form of the lay-out of the 1st edition of the Czechoslovak version of the educational thesaurus.

The definitive elaboration of the 1st edition of the Czechoslovak version of the educational thesaurus, including all the indices will be concluded only on the evaluation of results of the whole task, possibly after consultations with other partners in Czechoslovakia and in the C.M.E.A. member countries after the year 1980.

SOCIO-ECONOMIC INFORMATION IN THE FIELD OF EDUCATION

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The socio-economic information has been referred to the introductory report. I would like to add a few comments on these problems. Statistical information, together with the information from the fields of accounting, budgeting, calculations, operational registrations, or sometimes even with other information of socio-economic character /for instance, socio-economic indices, registers/, constitute a comprehensive uniform basic system of socio-economic information. This system comprises socio-economic information on all the branches of the national economy, but also on all the sectors of social life, including the field of education in its totality.

On the basis of this system, the partial specific information system, in our case oriented towards educational needs, is created. This partial system ensures input data for the system of the state statistics, it takes over and further utilizes some results provided by the state statistics, and processes independently other specific data, not covered by the state statistics. The uniting and integrating element of this partial specific system in the field of education are statistics, whose advantages in descriptions and inquiries into socio-economic phenomena in the educational system, and whose variety of methods and forms of expression enable their extensive utilization in planning and managerial activities, e.g. directly at the Ministry of Education, or at some other levels of management, or in the scientific and research basis, etc.

A major part of socio-economic information from the field of education is processed in the Institute of Educational Information at the Ministry of Education. This Institute performs the collection, classification and selection of information, its supervision and evaluation, its processing, and dissemination. The Institute fulfils essentially the function referred to on an earlier occasion, in connection with the description of the partial system of the socio-economic information.

I would like to dwell on some forms or methods of work of the Institute.

The most frequent way of obtaining information concerning the field of socio-economic information in the sphere of education is reporting. Reporting is used as a means of information transfer from the reporting unit - school up to our Institute. In the field of education the above process involves essentially the data transfer from the basic reporting units up to the place of processing, namely to the Institute and the processing of these data according to the requirements of users, in our case the Ministry of Education, the national statistical and financial authorities. With regard to the fact that a predominant part of the statistical survey is carried out for the purposes of decision making and management in the broadest sense of the word, in the system of observed indicators and also in the application of methods of processing, and interpretations, the requirements of the planned management are taken into account.

Today, we can say that a whole number of indicators of socio-economic information in the field of education is verified, and that the partial system of indicators of socio-economic information is created also with a view to ensuring long-term comparability of characteristics but, at the same time, also to responding flexibly to the phenomena emerging in the educational system. Today, we process in the Institute a whole number of data from all kinds of schools, starting e.g. with the pre-school education and continuing up to the universities, we process data on full-time and extra-mural studies, we have socio-economic information on that part of the educational system, managed, e.g. by the national committees, but also on the part of educational system, managed directly by the Ministry.

The fact that an overwhelming part of inquiries concerning socio-economic information serves many purposes, i.e. that the results are utilised by the scientific and research basis at different levels of the management, not only from the educational field, and that they are used also by other governmental and Party organs is very positive.

Another form and method of work, with the help of which the Institute gathers socio-economic information from the educational field are one-shot statistical investigations. At present, this method is used e.g. in the preparatory work for the Ministry of Education concerning the qualification of teachers and professional levels of instruction at primary and secondary schools. Results of these inquiries will be utilised in the creation of the uniform information system of the above-mentioned schools. Subsequently, they will be used by the Ministry of Education for information on the contemporary state of affairs, and for the planning of new teachers, in the long-term prospects. The above results will be used also at lower levels of management and in scientific research. An analogous method is used for acquiring data on school buildings and school devices under the administration of national committees. The objective of this inquiry is the creation of an integrated system, which will comprise decentralised operational registration of buildings and it will serve the needs of schools, and to the needs of the direct management organs - national committees. We have to create a central data bank that will serve the Ministry of Education and other administrative management organs. At the same time, while realising this, conditions for on-going topicalization of data within short periods of time will be created.

Other forms of work, with the help of which we acquire the socio-economic information from the field of the education consist in continuous investigations and research. For instance, at present we make a survey concerning the equipment of schools with teaching aids. This survey will undoubtedly influence the standard-forming activities in this field, it will have, no doubt, some influence upon the production of these teaching aids as such, on their distribution to the individual types of schools. While processing this survey we take into account also the fact that the respective data depend very often on subjective opinions and standpoints of the officials of the selected school. These forms of the Institute's work - inquiries and continuous statistical surveys practically complement the basic system of statistical reporting in the field of education.

May I be permitted to make a few remarks concerning data processing. At present, in the Institute we deal also with the question of introducing computers for the processing of socio-economic information in the field of education. We regard computers mainly as an element of rationalisation, a substitute for manual work in the process of collection, transfer and processing of data, precising and accelerating information. Some data have already been processed by the computer, and today we obtain data, which were not accessible when they were processed manually. However, on the other hand, where the automated processing of socio-economic information from the field of education is not yet prepared, either methodically or organisationally, we utilise fully small-scale or medium-scale mechanisation.

In conclusion, may I be permitted another remark - whether we wish or not, at present socio-economic information is ever more necessary for the officials linked directly or indirectly with the process of management and decision making in the field of education. Correct utilisation of socio-economic information at all levels of the management and in research presupposes, of course, very quick and reliable orientation in numeric data, in which educational statistics abound. I am convinced that socio-economic information together with the scientific and educational information are imperative for our further work in the field of education.

INTERRELATIONSHIP OF INFORMATION SYSTEMS IN CULTURE WITH INFORMATION SYSTEMS IN THE EDUCATION

Vilma Chavková, Centre for Management and Information Systems in Culture, Bratislava

With kind permission of the EDICO-2 Presidium I avail myself of this opportunity to inform you, distinguished Presidium and participants in the present Colloquium, on the information system being formed in an adjacent, we might say - in a cognate field, i.e. in culture and arts in Czechoslovakia. My intervention in the discussions has been stimulated by the fact that in many countries up to the present days education and culture are still managed by one Ministry, as it used to be here in the past, too, and furthermore also by the fact, that both these fields - education and culture - are very closely interconnected, they are interlinked and interrelated in many spheres. Suffice it to mention just very briefly, for instance, the system of libraries and the interaction of the educational and cultural systems, in maintaining and utilising their information holdings. Furthermore, it is the system of out-of-school adult education, which is carried out by means of a network of cultural facilities that belong under the direct or indirect, i.e. methodical, management of the Ministry of Culture, as well as of the Ministry of Education. A very important activity within the out-of-school education in various enlightenment and cultural facilities is, for instance, the teaching of foreign languages, undoubtedly referred to here during the past days from the aspect of school education, but the elimination of the language barrier, cannot be underestimated with those, who completed their school education. To conclude this enumeration of adjacent activities I would like to mention another important component of education and increased cultural and material standards of inhabitants - the amateur creative activities, in all spheres of fine arts /in the dramatical, creative, musical or literary arts/. May I be excused this rather lengthy preface to the problems, as it should have served only as a means of brushing up our knowledge concerning these matters, and at the same time, as an introduction to the information system in the field of culture. If we say that information comes into existence on the basis of human activity, and that it should serve as a means of obtaining perfect knowledge concerning the above activity, so that information could control it in turn in the best way possible, to regulate and utilise it, so we might obtain a closed cycle, in which also educational information would perform its cognitional, control, and creative functions.

From the above consideration we may deduce the evolution and development of the information system in culture and art, realised in Czechoslovakia on the national basis of two national cultures, i.e. the Czech and Slovak culture.

Information policy in the C.S.S.R. is guided according to the principle of strict sector or subject-oriented structuralisation, in order to avoid random inefficient multiple creation of parallel sector or subject-oriented information systems /in the federative organization of our state/ In spite of that one exception was admitted /we say here, in Slovakia, that the exception proves the rule/ from the principle of state-wide uniform character of the defined sector, namely in the case of culture. A conception of two national information systems emanating from the independence and specificity of the Slovak and Czech national cultures was created. These developments also justify the two national information centres in the field of culture, the Centre for Management and Information Systems in Culture in Bratislava, and the Institute of Information and Management in Culture in Prague. Both centres create their own national information systems according to the jointly conceived basic model, in the closest cooperation and coordination, with the aim of achieving maximum quality and effectiveness in the information activities, while preserving the principles of eliminating duplicity.

If we take into account the information at its entire extent, we have to admit that along with its educational function, it has a number of other important functions, as the evaluative, control, decision-making ones, and others. Information activities have been defined also from these aspects in the Ministries of Culture, as the basis for the control and decision-making processes and they are considered to be one object, in which these activities interact. The logical flow of information moves from the information creators sources of information /sources of information/ through the information processors /collection and processing/ to the users. The necessity of influencing educationally and didactically not only the information processors, but also the users is valid also in our country.

The information systems in the field of culture in both the C.S.R. and in the S.S.R. are created under the uniform methodical guidance of the state-wide information policy, having close link with the contemporary formation of systems, oriented towards socio-economic information, planning and budgetary information, and towards scientific and technical information.

Managers, scientific and research workers, and creative artists are interested not only in specialized information on information sources of scientific, technical, cultural, educational, aesthetical and cultural-political character, but also in very exacting information of factual and decriptive character, on cultural and artistic institutions and events, personalities and creators, activities and results, having specific national and cultural features. Information of this kind is collected, processed, stored and retrieved through the information centres at the lower level of management, as the two above-mentioned nation-wide centres, being sector--oriented information centres established at the organizations managed directly by the Ministries of Culture in the Czech Socialist Republic and in the Slovak Socialist Republic.

Scientific and technical revolution influences all the fields, and naturally also information science. Information activities are improved, modernized, mechanized and automated. In information activities within the field of culture there have been introduced new methods, resulting from mechanization and automation - for the time being primarily on the basis of research and the first realization outputs. The application of modern technology envisages extensive research, the verification in practical life, and only gradual introduction into everyday activities. For the time being, the automated processing of bibliographical information, acquisitions of library holdings, and some partial agenda of statistical information is used in practice. Under preparation are the automated processing of the data bank on all the people employed, not only in the Ministry itself, but also in the field of culture, on important personalities in the cultural and social life, the data bank on the development of culture in the C.S.S.R. in comparison with foreign countries, on cultural facilities and cultural and educational events, on amateur creative activities, and on other related topics.

In conclusion I should like to say that the information systems in culture, as well as in education, are created and developed in international collaboration and cooperation in a manner corresponding to the short tradition of the development of this new, widely conceived scientific discipline in culture. The above international cooperation is very important, which is confirmed also by this year's EDICO-2 Colloquium. We try also to utilise the experiences of more developed and related systems abroad and, at the same time, we will be pleased to hand over to others our experiences and knowledge, acquired in the course of research and solution of the tasks relating to the information systems in culture. I believe that the cooperation in the exchange of information will develop also among the information centres of educational information, and among information centres in the field of culture.

SOME POSSIBLE FIELDS OF THE INTERNATIONAL EXCHANGE OF INFORMATION

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While working on the project of Automated System of Management in Education, we are engaged in the creation of information systems, which should serve to the Ministries of Education in the Czechoslovak Socialist Republic. These information systems will cover gradually socio-economic, planning, standard-forming, educational, and other information, necessary for the individual levels of management. The complex solution of the structure and method of operation of the information systems requires mastering the techniques of collection, transfer, storage and topicalisation of information, while utilising efficient computers. It is for us of exceptional importance to gain knowledge and experiences from the creation of data-base systems formed in other countries during the solution of similar problems. We regard it very useful to establish contact with the workplaces dealing with questions of standards and directives, curricula, and other aspects of educational information. We are interested in unifying and standardising individual types of information for the needs of comparative analysis, and for the potential direct exchange of information. We regard the exchange of information concerning the modelling of information systems of management of organisational units in the educational system, programming and technological design of the operation of the above information systems to be equally useful.

Efficient management of the educational process requires the complex and integrated utilisation of information to an extent, which sufficiently covers the subject field of management. Today and particularly in the future, the process of management will be not able to handle the situation by requiring simple and elementary information, since the extent of accessible and necessary information is growing constantly, and it is impossible to gain control over information by traditional methods. The exploitation of efficient computing techniques and utilisation of methodology in pedagogy, psychology, sociology, economics and mathematical sciences, and in particular the uses the mathematical and statistical methods, lead us to believe that it is possible to model many problems of management translated into algorithms. Those are first of all the problems of development prognostication, the problems decision making on the basis of optimum representation of phenomena and processes, and other, both one-step and recurring tasks of the cognitive process. We consider it very useful to be in contact with the workplaces, engaged in the theory of management of education. We are interested in the exchange of experience and information in the field of modelling of tasks connected with methodological, economic and administrative management of primary and secondary schools, management of universities, as well as high-level management of the Ministry of Education. This orientation aims at the solution of further qualitative development of the educational process with regard to the creation of optimum relations among the scientific and technical progress, the educational process and the assertion in practical life of graduates from individual sorts and types of schools, and last but not least, also at the economic efficiency of the educational process. To put it very briefly, we are interested in exchanging information and pieces of knowledge from the field of input data processing, with the help of intricate mathematical methods and modelling, where the large extent of input information is concentrated into a relatively simple and well-arranged form, having a high propositional value and sufficient reliability, which is suitable for the further analysis of the examined phenomenon or process, and for the decision making in the management of education at various levels.

THE OBJECT AND MEANS OF PEDAGOGICAL DIAGNOSIS

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Education as the interpersonal and social phenomenon depends upon many important political, cultural, economic, psychological and sociological factors. The many-sidedness of their connections, which have to be accepted in the system of management of the educational process, necessitates the existence of a well-elaborated system of information. One of the partial information systems within the framework of the educational system is the uniform registration of pupils, which will be brought to life in the C.S.S.R. within a short time. In this connection it is necessary to solve theoretically, as well as practically, some relevant problems, as for instance the designing of uniform documentation, the method of mass processing, and the like. Moreover, it is necessary to prepare thoroughly the educational workers - teachers and educationalists for this project. Their abilities, possibilities and their willingness while participating in the URP project cannot be either substituted or counterbalanced - even by the best organisation of further stages of work with the registration.

The basic category is the teacher's diagnostic ability applied in the process of organization and management of the educational process. While elaborating the theory, we struggled for an exceptionally long time with the definition of the very proper concept of the pedagogical diagnosis. I favour an interpretation considering the educational diagnosis as a self-contained means for getting acquainted with the personality of and the social conditions influencing the pupil, his work and life. In this interpretation we differentiate the educational diagnosis from the psychological and pedagogical research and experiments, for which the educational worker is not qualified, and hence unable to carry them out. Moreover, the pedagogical diagnosis differs from the research also in the object and techniques of information collection and creation.

1. The educational worker is professionally not prepared for scientific research, as research belongs to the domain of specialists, but his pedagogical training qualifies him fully to make educational diagnosis. Moreover, after having finished basic and further teachers' training, and after having matured, due to the practical teaching experience, he is much better prepared for this activity than anyone else, because the pedagogical diagnosis is an individual component of the educational process, emenating from the latter and also returning back to it. That is why the generation of information necessary for the URP is mostly entrusted to educational practitioners - teachers and educationalists.

2. The object of the pedagogical diagnosis does not differ diametrically from the scientific research in pedagogy and psychology. Even though it is outstandingly more narrow in comparison with scientific disciplines, it is usually more complex than the individual research topics.

The pedagogical science studies basically the field, in which four elementary categories intermingle: teacher, pupil, educational system, and social environment. On the other hand, the object of educational diagnosis consists only of three elements, because the educationalist himself is the diagnosing *subject*, so he is not included in the object of the educational diagnosis. At present, however, in our educational theory appears the idea that the teacher should be led to a certain form of self-evaluation, so that the pedagogical diagnosis of the educational situation should approximate the pedagogical science at least theoretically, by its scope.

But, on the other hand, it is generally known that in the scientific research the model of the educational situation is examined only very rarely at its full extent. More frequently only particular questions are analysed. Contrariwise, the educational process requires from the teacher a rather many-sided diagnostic approach, because the results of the pedagogical diagnosis are immediately reflected in the educational strategy, and what is most important - education is a *complex* act.

3. *Techniques.* While the question of the object of the pedagogical diagnosis is a rather theoretical matter, and the educationalist at school is not even very conscious of it, the problems of diagnostic means are, along with their theoretical aspect, of considerable practical importance. The novelty and incompleteness of the theory of educational diagnosis are the best manifested during considerations of its means.

In order to shed light upon this aspect of the matter, we have to turn back a little. The process of management of education is based on the complementariness of results of three educational methods: *school supervision, pedagogical diagnosis, and pedagogical evaluation.*

The concurrence of these three processes in the course of the educational influence on the pupil is clear to every educationalist. While the supervision is firmly rooted in *pedagogical standards* /curricula, educational objectives, textbooks/, the pedagogical diagnosis investigates the objective and subjective correlates of the application of standard requirements. Only with regard to both these factors, i.e. what should be achieved in the education of a certain pupil, and what *can* be achieved, an objective and pedagogically efficient evaluation can be made. It is conceivable that also the choice of didactic means is connected therewith, but this will not be of any interest to us now.

Either method has its own practical proceedings conducive to concrete information. The diagnosis has them, too, even though some of them are only simplified and modified instruments from the arsenal of scientific research, and that is why they are not always fully applicable. Only very slowly there appear experimental techniques, specifically suitable for the diagnosis.

Observation is undoubtedly the essential medium of the pedagogical diagnosis. In the rudimentary protodiagnosis, which had appeared in the educational activities a long time ago, it was the *universal* and very often the only technique. Neither today it loses its justification, and thus during the last ten years several theoretical studies have come into being in our country, analysing the substance of the observation at school. These studies have tried to design a pattern, which would be most efficient, and if possible, free from any randomness, subjectivism, and inaccuracy, usually afflicting observation.

An interview with the pupil and his parents is a very important source of information for the educationalist. Also in this sphere there are all the time on-going experiments, in order to give more precision to the proceedings, to attain standardization, etc.

But also the techniques based upon the use of specialized inventory join in and have to be considered. Even though the use of projective and psychological tests cannot be taken into consideration for the time being, we give the teachers and educationalists, for instance, simple questionnaires at their disposal, with the help of which they can obtain - in accordance with the requirements of the URP - information not requiring evaluation, either from parents or pupils /for instance, data on the household equipment, on their accommodation, on their parents' education, etc./.

In connection with the introduction of the URP /uniform registration of pupils/ we want to promote on a larger scale the use of sociometric techniques among educational workers, about which they are informed in general, but they are unable to use them correctly. I am personally of the opinion that they should be lead rather to the use of sociometric indices than to the creation of sociograms, though the latter attract the teachers much more, but they tell them less, and do not conform to the requirements of the URP.

Another technique from the inventory of the pedagogical diagnosis is the comparison of study results in couples, which by means of a square matrix and simple addition leads to a certain comparatively objective hierarchy of pupils in the class. Definitely, this is a better way than the usual mark averages.

Specialists that are being incorporated gradually into the educational system, as for instance school doctors and adolescents' doctors, psychologists, specialized educationalists, etc., represent an individual source of educationally useful information.

POSSIBILITIES OF CREATING SECONDARY INFORMATION SOURCES FROM PASSIVE DOCUMENTATION MATERIALS IN THE FIELD OF EDUCATION

Magda Mlynková, Head of the Information Centre, Pedagogical Faculty of Comenius University, Trnava

Allow me to express my opinion concerning the problems of creating secondary information sources from passive documentation material within the field of education.

At the beginning, I would like to quote the respective decision made by the Central Committee of the Communist Party of Czechoslovakia, in May 1974:

"To create all-round preconditions for the enhancement of the effectiveness of work of the research and development base. With regard to this, also the system of scientific and economic information should be improved."

The content of the decision attaches such importance and significance to scientific information within the framework of the scientific research that it should be respected in the department of education, too. I will not say anything new, if I remind you of the fact that in the last ten years the information explosion has afflicted all the world and, not avoiding any field, whether in technical, natural or social sciences. The explosion entails a number of problems which have to be solved as soon as possible, in order to ensure the continuous flow of information, and the establishment of channels and processing centres.

Many scientific fields or domains, as the natural, technical or applied scientific fields, are relatively capable to cope with these problems. The flow of information is relatively well ensured there. The necessary channels are created there, the systems are elaborated and revised, information centres are equipped with the necessary means of mechanisation and automation, etc. These factors make it possible to supply the user with prompt and ready information.

We cannot claim this unequivocally of the maintenance of continuous flow of information in some fields of social sciences. Unfortunately, we have to note that also the field of education belongs to them.

At present, we are rebuilding the former central faculty libraries at the Slovak universities and transforming them into study and information centres. Their objective is to provide more extensive services to the users than those rendered by the former libraries. Those services will have to be extended to include scientific and professional information required by scientific workers or specialists for their pedagogical, scientific, and research work.

The extension of authentic information requires along with the primary information sources also well-maintained holdings of secondary and tertiary information sources. Since the latter facilitate orientation within the primary information sources. Today, it is not possible to perform information activities without the secondary or tertiary information sources.

The establishment of the system of secondary information sources within the field of education encounters great difficulties. Even though there have already been some achievements in this field, which is attested to by various materials published by the Centre of Educational Information, it is not enough and the operation is rather slow. For instance, there are only few documentation centres, either at individual centres in the libraries, or at the Pedagogical Faculty, or at various institutes and institutions. On the other hand, in different fields the processing of materials from primary information sources is a natural phenomenon accompanying scientific activities. The documentation material is processed by means of all modern methods, exploiting mechanisation and automation offered by modern technology. Unfortunately, in the employment of the field of education there still exist very large gaps, which should be bridged, and the system of information flow should be built as quickly as possible, if we really want to implement the above - mentioned decision. For instance, the situation at our Pedagogical Faculty of Comenius University in Trnava is the following one: one part of the lecturers and scientific and research workers commutes between Bratislava, or possibly some other towns and Trnava, the other part of the lecturers living at Trnava. The former are rather pressed for time because of their commutation, and that is why they cannot afford to visit various institutes, and thus to obtain various information material. The latter, who live at Trnava, have no possibility to acquire the information material, as there are no institutions of such a character there.

And that is just one reason more which speaks for the creation of a presentable information centre at the Pedagogical Faculty of Comenius University, which the consumer could approach with confidence, and acquire reliable, even though not always completely exhaustive information.

As our Study and Information Centre does not fulfil the necessary conditions, we have decided to solve partially the question of creating of secondary sources, through the elaboration of the bibliographical and documentation card catalogue from the passive documentation materials, to be concrete - from the catalogue entries of the Departmental Bibliographical Bulletin published by the Institute of Educational Information and the Slovak Pedagogibal Library in Bratislava. This is of some help, and I think it is a step forward in the development of our centre. But this is by far not sufficient to cover the information needs of our Faculty, we would like to build a bigger and better system. That is why we are greatly interested in acquiring passive documentation, which is the most rational way of creating secondary information holdings, but the acquisition of this documentation in the field of education is not so simple.

Naturally, it could be objected that the faculties should render assistance in the processing activities, and that it is necessary to engage the scientific workers and specialists themselves in the excerptions of various documents, which may be partly true, but only partly - I have to stress. I would like to ask in all modesty, whether the cooperation of the above-mentioned workers in the processing documentation and bibliographical activities can depend on us, librarians, or information workers, when we have no means considered to be a natural reciprocal phenomenon in other fields and departments. This is the question of financial possibilities.

It might not be very modest that I am underlining in connection with this problem funds, necessary for the creation of the information base, but unfortunately, they form an important determining factor in the development of these activities.

At the same time, we have to claim our due, because the field of education is of enormous social importance in view of its mission in the socialist society, and moreover its unquestionable specific heterogeneity.

For instance, by its profile the Pedagogical Faculty of Comenius University at Trnava has covered nearly all scientific branches from the whole Comenius University. It is not simple to embrace such a diversity of scientific fields.

In conclusion, I would like only to add that the competent officials of the central authorities, functionaries, scientific and pedagogical workers should be more intensively involved in the creation of conditions for the building of the information base, and to realise the importance of this activity, ultimately serving precisely them.

IMPROVEMENT OF INFORMATION AS AN IMPORTANT PRECONDITION OF SUCCESSFUL MANAGEMENT OF EDUCATION AND ITS BASIC UNIT - THE SCHOOL

Zdeněk Obdržálek, Department of Pedagogy and Psychology, Faculty of Physical Training and Sports of Comenius University, Bratislava

Scientific and pedagogical information, socio-economic information, as well as planning and budgetary information create an important precondition for the successful process of decision making at all levels of the management of education. Consequently, they render impact both at the input and output of the decision making. A number of information items issue from decisions; information and decisions mutually condition, but also limit each other. However, the interrelation of these two categories cannot be interpreted simplicistically, as a relation of two phenomena existing side by side, eventually interlocked by means of a system of subsets, trying to find borderlines between them.

They should be understood as a relationship of two diverse, mutually differing sections of a single examined subject - the education management system.

It is evident from the above-mentioned fact that we consider information to be an important component permeating the whole process of education management - it removes uncertainty in the process of decision making, it influences the objectives and algorithms of the decision making, it points out possibilities, and it directs the attention to limitations.

The proper managerial documents consist in determining the objectives, the algorithms of decision making and the possibilities and limitations.

We can see from the outlined facts that within the social system the "education" cannot be identified, eventually it is impossible not to differentiate sufficently the proper decision making from the collection, process and processing of information. The documents of decision making cannot be realized without the authority of the decision making subject within the system of "educatiqn", without the automatic responsibility and competence of the managerial authority, only on the basis of information, because the majority of the phenomena which are here being decided about, are of the stochastic character - the character of probability, and the information can only ensure the increase of probability of the correct selection of the decision, but cannot determinate an unequivocal decision, or a decision in its totality.

What are the claims emanating from the above-mentioned theoretical premises concerning the information for the management of education, and its basic unit - the school:

1. It is necessary to demarcate and elaborate the content and extent of information necessary for the central management - that means for the management from one centre, for the management from the intermediate link, i.e. from the National Committees in the C.S.S.R., and for the management of school, too. To concentrate the attention upon essential and key information, and to omit the information which is irrelevant and burdens administratively and uselessly the schools, the intermediate level and the central level of

the education management. At the same time, it is necessary to take into account the specificity of the social system of "education", and to assess very sensitively which requirements concerning the content and extent of information, suitable for non-educational departments, are adequate for the specific social system of education. Since the educational system ensures primarily the educational process which differs fundamentally from processes handled by other departments.

2. To realize the demarcation of the information for the individual levels of management in dependence upon the delimitation of the decision making processes at individual levels of management. To assert the principle of condensing information in the direction from the top to the bottom. To demarcate chiefly information for the conceptual management for the higher links of the management, and to assign information for the operative management rather for the schools and the intermediate level of management /National Committees/. To contribute in this way, to make higher links of educational management not operative, highly determining, and responsive, but conceptual managerial institutions. It is necessary to elaborate that part of information, having directive charge, and informative reports without the directive characteristics in the management of education, with respect to all levels of management of education. Our research concerning the the management of education has shown that there is information having weaker or stronger directive charges and that there are very often too many directives, conducive to inflation in this respect.

The subordinated links get used gradually to the existing state of affairs, they do not respond to it, they implement the tasks only partially, the superior authority is not able to supervise them, and to enforce their observance.

In the management of education rather information offering opportunities and limitations than information containing directive charge has proven to be successful in many situations. The positive motivation, which is of enormously great importance for the management of the social system of education, has been reinforced in this manner.

Of great importance is also the time dimension of information for the decision making in education, and it should be taken into account. As regards information designed for short--term regulation, for close time horizons, there prevail the external limitations determining the decision making. Information of this kind should be used predominantly at the lower levels of the management of education. If central authorities operated predominantly with this kind of information, the administrative approaches and conflict situations within the management of education would come to the fore. Contrariwise, information of more fundamental and more qualitative character is of greater importance for decision making and creation of possibilities and limitations from the viewpoint of more distant time horizons, ensuring more fundamental and qualitative changes in education.

Likewise the document: "On Further Development of the Czechoslovak Educational System", which creates preconditions for the conceptual and purposeful solution of educational questions, and for the improvement of the management of education in the succeeding period is such a source of information of fundamental and qualitative importance for the management of the Czechoslovak education in the current situation.

The function of information suitable for a conceptual management of education is performed also by the scientific and pedagogical information concerning contemporary and perspective questions of the management of education. The proportion of the latter information has to be increased. At present, we have no specialized centre engaged in questions of the management of education in the C.S.S.R., contrary to the German Democratic Republic, which set up the Information Centre at the Institute of Management and Organization of the People's Education of the Academy of Pedagogical Sciences in Potsdam to deal with these problems.

Allow me to voice a few ideas concerning questions of information as a precondition for the management of the basic unit of the educational system - the school.

The important sources of information for the management of schools are educational processes, instructions by the managerial authorities /the school administration/, information from the pedagogical, psychological and methodical literature, namely from the literature concerning the management of school, and other information.

None of these sources can be either underestimated or overestimated, but all of them have to be utilized in dialectical unity in the management of education. If we acknowledged and applied to practice the principle that methodical periodicals are important sources for the activities of teachers of individual subjects, then there would be also necessary an information source for the activities of numerous school headmasters, namely a periodical reporting on the latest questions of management, and on experiences of the best educational officials. This function is fulfilled, for instance, by the Narodnoe obrazovanie periodical /National Education/ in the U.S.S.R., and there exists also a special edition of books entitled "The Library of the Headmaster". I think that these questions should be approached in a similar way also in other countries, and naturally, in our country, too.

Our empirical research, the attention of which has been focused on questions of school management, have observed also the flow of information between the headmaster and the teachers. We have found out on a representative sample of teachers in Slovakia that in spite of numerous positive aspects, information is not a strong point in managerial activities at our schools. The process of information has been placed on the sixth place among eleven managerial activities.

Approximately 44 % of the respondents have evaluated the problems of information flow between the school management and the teaching staff unequivocally positively. 55 % of educational workers engaged in this research have signalled some problems and deficiencies in information activities, even though of various degrees.

In many schools tendencies of one-way flow of information - from the headmaster to teachers, with less feedback information came to the fore. Another problem existing at some schools is incomplete objectivity - the value of information offered by the headmasters to the teachers. A part of information is provided by the headmaster only in a fragmentary form, another part is extended only to selected teachers.

Less intensive utilization of information from teachers' own studies and observations of the educational process, and basically only the utilization of information extended to the headmaster by the school administration, constitute another problem in some schools.

In spite of the fact that the above-mentioned negative phenomena concerning the extension of information to the teachers at schools have been disappearing, they still exist, influence the working atmosphere of the teaching staff, and limit the unified and coordinated educational influence of the entire teaching staff.

These deficiencies in information being a means of school management schould be eliminated.

And finally, I want to stress yet another function, but definitely not the last one, concerning information in the process of school management, namely the function of ensuring the teacher's identity with the educational work, the motivation of his feeling of belonging to the whole teachers' collective, because that is one of the most important preconditions for successful pedagogical activities.

THE SHARE OF THE DISTRICT PSYCHOLOGICAL AND EDUCATIONAL COUNSELING SERVICE AND THE VOCATIONAL GUIDANCE BUREAU IN THE PREPARATIONS AND UTILIZATION OF THE UNIFORM REGISTRATION OF PUPILS

Ján Šós, Director of the District Psychological and Educational Counseling Service and the Vocational Guidance Bureau, Košice

The staff of the psychological and educational counseling services and of the vocational guidance bureau render assistance to the Institute of Educational Information in Bratislava in the preparations of the uniform registration of pupils, because they regard it to be an effective instrument, helping achieve the efficiency and further extension of the psychological and educational care for the people.

The counseling psychology /as a system/, eventually the psychological counseling service /as an activity/, bridges certain gaps in the care for the many-sided harmonious development of the human personality in the society /Koščo/, and it considers it to be its objective to contribute to the solution, to the optimisation of life both from the viewpoint of the positive development of the individual as such, an from the viewpoint of the society.

The developing psychological and educational service /proceeding from theoretical foundations, developed by the Assoc. Prof. Koščo, Assoc. Prof. Hvozdík, Assoc. Prof. Klímová and others/ tries to render concrete help in practical life by solving various problems encountering man, and to help him in his different personal and social tasks in the course of his whole life.

It renders its help tying in with the developed system of health, social, and juridical services. The subordination of the psychological and educational facilities to the Ministry of Education enables them to commit themselves to the process of education and instruction.

The psychological and educational clinics and counseling services in the districts are orientated not only towards rendering guidance, re-education and psychotherapy of disorders their patients but they also actively - preventively - contribute to the removal of causes, which might give rise to more serious disorders in the development of personality.

I will adduce the determination of the children's readiness to start attending the school. On the basis of the preliminary examination of children /a few months before the child starts to attend the first grade of the elementary nine-year school/, the psychological institutions propose individually, on the one hand, the premature enrolment of the children to school, who in spite of the fact that they were born later than is the age set by law for children to start with the compulsory school attendance /the period from September until December/, reach the required level and criteria prescribed for the school attendance, and on the other hand, they propose postponements of the school attendance /in spite of the age/ when the development of children is somewhat retarded. With those children, coming from an environment enjoying less social advantages, the above services may suggest their school attendance in the so-called leveling classes. The children having symptoms of slight mental disorders are suggested to visit special classes, where they are trying in collaboration with special pedagogues to regulate the individual process of their education. As concerns the mentally retarded children, the above services propose that those children should attend some of the special educational facilities. The uniform registration of pupils /URP/ will enable to follow, on a long--term basis, and to evaluate objectively and promptly the correctness of the above-mentioned educational measures.

The personnel of the Counseling Service /12-15 workers/, having a great number of clients and numerous tasks, presently cannot acquire and evaluate the above-mentioned information, which is necessary for evaluating the correctness of the procedures, and finally also the efficiency of their activities.

Furthermore if we succeed in extending the uniform registration also to children of pre-school age, and if we start the registration card when the child begins to attend the kindergarten, it will be possible with the help of this registration, in the third year of his life, to find children being above or below common standards, and to apply to them corresponding special-care programmes. Psychologists work intensively upon the development of these registration cards. The project will also enable re-educational interventions from the standpoint of ontogenetic development of a human being in the period rendering possible highly effective interventions without the child's absence from school or at the expense of eventually to spend time assigned for the regeneration of the child's energy after the lessons are over.

The URP will be of invaluable help also for the psychological examinations of pupils, for instance those, not having good results or not progressing well in the upper grades of the school, as it will be a source of very extensive and objective anamnestic information. The objective information concerning the development of interests, and other constituents of the pupils' personalities will also be invaluable for the vocational guidance advisers. They will be, at the same time, comparable with the topical data acquired from the overall population or from optionally selected cohorts, e.g.: district, school, class. As far as the time is concerned, the psychologists' group diagnostic activities focused on special abilities in connection with the vocational guidance will be much more efficient, because it will be possible to eliminate inquiries concerning anamnestic data. On the other hand, the linking to and utilisation of the network of the currently designed computer system is envisaged. The psychological and educational facilities thus can enrich the URP with further information concerning the development of the human personality, and to improve the quality of the process of standards formation of the psychological diagnostic methods.

As evident, also the psychologists are interested in having the registration comprising the most valid and the most reliable indicators, the creators of which are along with the pedagogues and sociologists, they themselves. In our opinion, the uniform registration of pupils should acquire data directly from the pupils and parents in the future, without increasing the already high expenses connected with the project. The realisation of the URP, being now only in the phase of experimental verification, will undoubtedly require yet a lot of efforts in order to fulfil the daring and correct objectives of its authors.

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AUTOMATED SYSTEM OF PRIMARY SCHOOLS OF THE FIRST AND SECOND STAGE

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One of the objectives of the creation of the automated management system in the department of education is to enhance the efficiency of educational work at primary schools of the first and the second stage.

The implementation of this objective is based on the elaboration of the respective subsystem, on the verification of its functioning and its gradual introduction into the routine utilization.

This subsystem can be divided, from the view of its contents and subjects, into the following activities:

- educational,
- scientific and research,
- ideologic and political,
- staff and personnel,
- economic and administrative.

Having defined the activities in this way, we should consider the process of education and instruction as an interaction between the teacher and the pupil, and its dependence on personnel, material, and technical aspects.

While solving the task defined in this way, it is necessary not only to analyse the problems of micromanagement and macromanagement, and problems of the ideologic and political, information. I will say just a few words about the set concerning the educational research. Our Institute, in accordance with the realization programme of the reconstruction of studies, works on the task of gradually introducting selective technical blocks of subjects at general secondary schools. After this stage has been completed, it would be purposeful to evaluate the results of such a research in its whole complexity with a computer, and to include them in the information set for the future needs. The knowledge would be utilizable in further work upon the task; some pieces of knowledge could be most probably also generalized, and used in the solution of other tasks having similar character.

The creation of the above-mentioned information sets enables the establishement of the subsystem of the automated management system within the educational system. While being constantly maintained and innovated, it will influence permanently and positively the efficiency of the educational work.

A specific position belongs to the subsystem of result supervision in the educational process in the management system. We can say that the present supervision subsystem is build upon empirical surveys showing traces of subjective approaches. Under such conditions, the vision of improving the standard and effects of educational work at schools becomes rather vague, and it is difficult to evaluate with genuine responsibility the extent and the quality of the implementation of educational tasks by individual schools in regions and districts. In order that the evaluation approach be more objective, the efforts directed at qualitative changes of educational system in the socialist community as a whole including our country, will play an ever greater role. To the fore comes the need for a complex and objective view, applicable at any time and in any kind of school as a basis for the elaboration of another, very important, aspect of management - the exact, theoretically and practically well-founded guidelines for the constant advancement of the educational process and socialist education in general.

ON THE PROBLEMS OF CREATING THE DATA BASE ON SECONDARY SCHOOL-LEAVERS AND UNIVERSITY GRADUATES

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Educational and instructional objectives of the whole Czechoslovak educational system issue from the contemporary, but mostly perspective requirements of the technically developed socialist society. Not only the curricula and the syllabi proceed from this essential principle, but also the profiles of the graduates from the individual types and branches of studies. A significant indicator of the interconnection of the educational system and social needs, and thus also of the value of the pedagogical process, is the assertion of graduates from individual types of schools in practice. In this connection there has appeared rather naturally a requirement to examine the theoretical, professional and practical knowledge of graduates from individual types of schools, acquired during the course of studies, and having relationship to the work performed, and to examine the circumstances and conditions of their placement and assertion in practical life.

Information on the assertion of graduates in practice is, at the same time, one of the presuppositions of successfulness of the scientific management and optimum functioning of the educational system, as well as of reprofiling and restructuralisation of the educational process.

For these reasons, also the requirement of designing and establishing the uniform integrated information system in the educational system came to existence.

The designed information system of primary and secondary schools consists of three spheres of problems. One of them is the sphere of problems: Information Subsystem on Pupils and Graduates. With regards to the social needs and requirements concerning the education anchored in the project of further development of the Czechoslovak educational system, the creation of the data base on the graduates in the years 1976-1980 is orientated first of all towards graduates from vocational secondary schools. At the same time, this year, we will organise already for the second time, and the following year the collection of data concerning the assertion of graduates from universities in practical life. The collection of data on the assertion of graduates from universities in practical life is being realised on the basis of essential sets, the collection of the data on the assertion of graduates from secondary schools on the basis of representative selections. We will obtain necessary data both from the graduates themselves and from their employers.

We will be acquiring the data on graduates in intervals, a five-year interval, being envisaged, while we will gradually record the data on graduates from all types of secondary schools and universities. The data base concerning the graduates, in contradistinction to the information subsystem concerning pupils, teachers and schools, will not be built on the principle of the uniform registration recording all the units. The object of the interval information acquirement will always be other graduates from the same type of school, and this is why the data base on graduates cannot substitute in any case other information systems, built on other principles and having other objectives.

As regards the contents of the data bases on graduates from the individual types of schools, the attention will be focused, along with the recording of demographic structure /basic identification symbols/, mostly upon the following continua of problems:

1. Functioning of the contemporary system of the placement of graduates, in relation to their assertion in those branches of the national economy, for which they were planned and trained.
2. Migration as well as intra-sectoral and inter-sectoral fluctuation of graduates.
3. Relations between the jobs /or functions/ assigned to graduates, and their achieved level of education.
4. The evaluation of theoretical, professional and practical knowledge, abilities and habits, acquired during the course of studies, necessary for the execution of qualified work.
5. Further education of graduates and enhancement of qualification after entering a job.
6. Conditions at work, capacity, salary, housing and family of graduates after they start to work - care of the employers for graduates after they start to work in practical life, and their jobs in relation to the realisation of graduates' expectations regarding their assertion in practice.

Approximately 100 investigated indicators are involved, their number and contents being modified according to the subjects of investigation. We will process the acquired data on the one hand globally, for the individual types of schools, and on the other hand, according to the basic branches of studies, quantitatively and statistically, as well as by means of the method of qualitative analysis.

While forming the data bases on graduates from the individual types of schools there will be acquired data that have feedback importance for a very important section of the educational system and for its management. Those are data which can be utilised as a basis for considerations concerning the adequacy of the individual subsystems of the educational system from the viewpoint of the global system of the society. The data bases on graduates can thus be regarded on one hand as a significant complement, with the help of which the Uniform Registration of Pupils /URP/ is extended by an organic part, and at the same time the data bases on graduates can be considered to be a specific component of the information system of the educational system, while these data represent, because of their importance, one of the inputs of the Automated System of Management.

The projected data bases on graduates are of specific importance in the contemporary period of creating of the Automated Information System and the Automated System of Management as well, since they serve for the acquirement of experiences necessary for decision making, as regards the definitive shapes of both systems, taking into account the graduate in general.

But the projected data bases have to serve first of all to the objectives of managerial, administrative and socio-technical character, taking interest in a more efficient and more rational management, as well as the educational system as a whole, and the educational process in the individual types of schools, too. At the same time, these data bases will enable us to follow the given problem situation in such a range of its variability that the individual components, dimensions and factors will stand out sufficiently differenciated, in particular from the viewpoint of requirements of the higher managerial components of the department of education, which represents the most important user of data concerning the graduates, but also from the viewpoint of other departments, authorities and institutions.

In conclusion, I should like to state that because of time I shall not present on this forum the acquired empirical data from the concluded research on the assertion of the graduates from universities in practice, as well as the universal generalizations deduced from this research.

Conclusions of this research were the subject of individual negotiations between the highest authorities of the Ministry of Education of the Slovak Socialist Republic, other ministries, academic and scientific bodies of all universities of the Slovak Socialist Republic, general-director's offices of manufacturing corporations, as well as other authorities and institutions.

Information and data on the assertion of university graduates in practical life are used mostly by schools, which implement innovations of syllabus programmes from the viewpoint of dynamically changing social needs.

The projected data bases on the assertion of the graduates from secondary schools and universities in practice are a constituent of the programme of economic research. The creation of the automated systems of management is given priority by the highest political and Governmental organs in the Czechoslovak Socialist Republic.

THE EDUCATION OF USERS OF SCIENTIFIC, TECHNICAL AND ECONOMIC INFORMATION AT UNIVERSITIES

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The advanced socialist society and the extensive scientific and technical development require more intensive and professionally sophisticated training of the users of information in order to master the fundamental principles of work with information sources.

This problem manifests itself most markedly at the university, which prepares experts for the individual spheres of political, economic and cultural life. The information training of students has been introduced at nearly all universities, even though the curricula do not include this subject seperately. In the introductions to studies of individual subjects /mainly social and scientific/ references were made as to the organisation of libraries and collections of bibliographical sources, but this was done only very briefly.

The library staff at universities and colleges started, on its own initiative, with the information training of the university students, yet, the extent and quality of such education being diverse. In contradistinction to many foreign universities /in the U.S.S.R., the German Democratic Republic, the Polish People's Republic/, in our country the education of information users is not yet legislatively, financially and personnel-wise ensured.

The information training of undergraduates at the Nitra Pedagogigal Faculty has tradition of long standing. The training is carried out by the staff working in the Study and Information

Centre. It consists of a preparatory seminar in the first study year, at the beginning of the term. The lecturers, together with the freshmen of a certain study group, visit the Study and Information Centre /ŠIS - SIC/, where they get acquainted with the organization of the Centre's work, with conditions governing the lending of books and methods of work with library and bibliographical catalogues. The explanation is connected with the excursion to the Study and Information Centre - to its individual departments and with the practical retrieval run of study sources in catalogues and card indexes.

In the third year of study we have introduced an optional lecture /2 lessons/ connected with discussions and practical illustrations of the theme Elaboration of Graduation Thesis, Seminar Work and Other Specialized Work, which, however, is insufficient for acquiring all necessary pieces of knowledge from the information science. Since the lecture is only optional, its attendance is far from satisfactory. During the lecture consisting of two teaching units and during the discussion it is impossible to embrace the whole content of the professional information education of students. The explication is reduced to essential data concerning bibliography and information science in general, and the pieces of knowledge from the first year of study concerning the work with bibliographical material, catalogues and card indexes are recapitulated. The principles of the centralization of educational sources and materials, various ways of studies and methods of scientific and research work, references and the processing of literature indexes are briefly analysed.

Even though this lecture fulfils its aim and it urges many students to visit the workers of the SIC /ŠIS/, to consult them and ask for advice regarding further advancement in their work, it is still not sufficient.

A number of universities have considered these problems and we can only welcome the fact that the subject of "information education" of professional information users has become the subject of the research project of the Department of Librarianship and Scientific Information at the Philosophical Faculty of Charles University /FFUK/ in Prague.

The contents of this project has to be reflected in the presently on-going reconstruction of the educational system and education in general. The primary school has to teach the pupil the orientation in school and local libraries, how to make most of the essential information sources. The secondary school has to teach the student the technique of work with information, and its application to study. The university has to provide the student with detailed knowledge of subject-oriented informatics with regard to rationalization and methods of creative scientific and professional work. After starting to work, the graduate is able to apply such knowledge to practical life, to develop it in his further activities. We, at the Nitra Pedagogical Faculty proceed from the same opinion, and we are successful in our endeavours to a considerable extent.

The creation of a system of information education has also become a part of the plan of projects of the Federal Ministry of Technical and Investment Development and of both national Ministries of Education. The above project should be realized as soon as possible.

The project proposes to introduce the information education at universities in two stages:

The first stage: in the first year of studies an excursion to a library /SIC - ŠIS/, lasting five teaching units, connected with a lecture on the organization of work in a library and on services provided by it, on practical orientation in the library and bibliographical catalogues, brief description of institutions of branch and subject-oriented systems /with regard to the subject of studies/.

The second stage: lecture, consisting of one or two teaching units, on general and specialized information science in the third grade of studies, during one of its terms. Undergraduates from the Pedagogical Faculty get credits in this subject.

The project comprises specific proposition regarding information training pedagogical faculties. It is suggested to include information science among subjects of the second term, in the form of a compulsory one-term seminar with two teaching units per week. The project envisages also the inclusion of information science in social and political practical training /out-of-school education/ for a selected number of students. For extra-mural students a two-teaching-unit lecture in the first term is recommended.

The reconstruction of the pedagogical faculties brings about great changes in the content of teaching. Consequently, these circumstances should be taken into consideration, and information training of students should be included as a seminar entitled "Introduction to Methodology of Scientific and Professional Work"in the third year of studies similarly as to other universities. The contents of the seminar in the first year includes correctly also the organization and technique of work in libraries, because many students from pedagogical faculties will also be librarians in local libraries along with their teaching profession. Furthermore, teachers of primary schools, or according to the new curricula of studies at pedagogical faculties, also of secondary schools, will teach information science, either as an individual subject or within the framework of individual specialized subjects. That is why we propose to extend the number of teaching units of the fundamentals of the information science and bibliography in the first year at pedagogical faculties. The project envisages the inclusion of information science in general educational essentials at all pedagogical faculties. The information science should permeate also the instruction of all main subjects in the primary schools of the first and the second cycles.

In our opinion it is very important to start with the information education of pupils in the first cycle of primary schools, i.e. as early as from the 1st to the 4th grade. Habits of regular reading, regular visits of school and local libraries, interpretations of the read text, discussions about books, etc., should be a part of the curricula. It is precisely this age that the child starts to get acquainted with the book, starts to make use of the library services. He shifts from reading fairy-tales and the children's literature to reading popular and specialized text and to factographic literature. Correct regulation of the pupil's reading, guidance in the choice of books, making use of reading rooms and libraries should be the content of information training from the very early childhood.

The 5th up to the 8th grades build on the general knowledge acquired in the lower grades. At this age pupils start already their reorientation to the choice of their profession, they reach for the specialized literature, often not corresponding to their knowledge. As the participants of the "Olympiads" they must be necessarily interested in broadening their knowledge by studies of various sources. They work with literature having reference and encyclopaedic character. They learn how to find orientation on their own in library holdings and catalogues. They come across bibliographies, and they process on their own various surveys of literature. They take part in excursions to libraries, to the scientific, technical, and economic information centres and to the computing centres.

The time table of information instruction envisages 2 teaching units from the 2nd to the 4th grades, and 4 teaching units and 4 hours of excursion from the 5th to the 8th grades.

It has not so far been decided whether information science will be included within the subject of the mother language or within the civics. This aspect should also influence the insertion of the information science into the curricula of pedagogical faculties.

Information education should also permeate other subjects taught at the elementary nine-year schools, becoming their fixed part. Information education of students at pedagogical faculties will proceed according to the new project of the Czechoslovak educational system, particularly by means of proseminars, which we have missed until now, as the survey of the existing literature on the subject, and as a part of methodology of scientific work; thus the students' knowledge of information science at pedagogical faculties will be improved. Undoubtedly, some additional knowledge in informatics would do no harm to most educationalists.

When evaluating the level of information education of students of all stages of schools, with special emphasis upon university students, we are of the opinion that the present trend of introducing this subject into the process of instruction is correct. The streamlining of practical training at individual faculties and the legalization of informatics instruction will make possible its incorporation in the curricula, according to the Project of the System of Information Education of Users of Specialized Information in the C.S.S.R. The introduction of information education to the curricula of pedagogical faculties deserves special attention.

The gradual introduction of education of the users of scientific, technical and economic information into the process of instruction at all schools will take place as early as durign the sixth Five-Year Plan. In addition to introducing this subject into the educational process at schools, information science will become useful also in social practice, namely in a form of out-of-school education.

The contribution and the resulting effect of teaching information science will become evident in a number of ways:

1. The efficiency of the educational and instructional process at schools of all stages will be increased. There will be formed habits in the work information, enabling students to orientate themselves in the flood of new pieces of information and in correct choice of information sources already during their studies.

2. Students of all stages of schools will master necessary methods of work with information documents, and will make use also of other information sources, in addition to the compulsory literature.

3. The secondary-school and university graduates will be able to enhance further their level of education, and to contribute to the process of management and decision-making as well as to the creative scientific and research activities by means of correct choice of relevant information. This relevant information will enable them the application of up-to-date knowledge to the scientific and professional activities in practical life.

The current reconstruction of the university system requires the utilisation of all possibilities of applying information education of students. The results of research and the processed projects oblige us to realise the instruction of information science to the full extent, and at an earliest opportunity, because only that way we will be guaranteed that youth and the new socialist teachers will be able to fulfil these projects, too. The scientific approach towards understanding and orientation in information science is necessary, to make a correct and quick choice from the existing multitude of information.

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GENERATION OF INDEXING DICTIONARIES FROM THE VIEWPOINT OF CREATING INFORMATION SYSTEMS

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When creating the information system of scientific and technical information in the educational field, special stress is laid upon the elaboration of an indexing language. The indexing language represents only one connecting link within the preparatory stage - no matter whether we bear in mind the subject or systematic indexing language. From the viewpoint of the theory of the given branch and the Universal Decimal Classification /UDC/, it is precisely this connecting link that renders possible the translation from the natural language into the artificial one, i.e. it enables the formalisation, or better said, the normalisation of the natural language. The difference between the two languages consists first of all in the fact that the freely formed language dictionary is changed into a managed and managing language dictionary. A whole number of new facts is characteristic for the latter one, which the previous dictionaries did not contain and did not take into account: for instance, indexing dictionaries exclude synonyms, homonyms, and are based upon keywords or headings, and their generation and classification is more exacting and more diverse, etc. In the preparatory phase they necessitate first of all the selection of sets of keywords - basic concepts from the field of pedagogical sciences, from the theory as well as from the educational practice. On the basis of the most frequent basic concepts within the field, the so-called descriptors, which are the elements of the indexing language, it is necessary to arrange lists of headings /rubricators/, i.e. comprehensive sets of these basic descriptors. In this manner, the foundations of a thesaurus, or a dictionary of a special indexing language, in this case in the sphere of education are laid.

The principle objective is to ensure that any kind of document, topic, or publication from the field of pedagogical sciences could be expressed by a certain set of fundamental concepts, while every important keyword, or fundamental word should represent, at the same time, also the most simple form of an extract, abstract, or excerption. And here the pivotal problem of creating the indexing dictionary and indexing language comes to the fore, namely: how to ensure maximally objective selection and evaluation of the descriptors, Lists of headings, and finally also of the indexing dictionary itself, because a considerably large working team of various specialists, various authorities with various working standards, and with various erudition participate in the preparatory work. The selection has to be, at the same time, representative, it has to suit contemporary standards, and, if possible, it has to take into account also the trends of future development, prognostic needs and possibilities within the field of pedagogical sciences, at least until the year 2000.

There are several possibilities of the scientific elaboration and preparation of the indexing dictionary; I will mention here two extreme variants.

It is, for instance, possible to proceed from the opinion that all the previous work on dictionaries in the field of education is out-of-date, insufficient, and thus unfit for use. In that case, it is, of course, necessary to create an entirely new indexing language, on the basis of broadly conceived research: to form, if possible, a large problem-solving team, who will, first of all, carry out the excerptions of selected literary sources, consider this selection, arrange an index of selected descriptors, rubricators and start with the creation of a thesaurus, which is in fact a decriptive indexing dictionary. This work, divided into certain stages, has to be scheduled for a period of at least five years, and if it is possible, to be ensured from labour, economic, managerial, and other aspects, either within the framework of the departmental or the State research plan. This is how the creation of the indexing language and thesaurus in the field of education, instruction and the pedagogical system is ensured in the C.S.S.R. at present.

However, it is possible to choose also other approaches to solving the same task. It is, for instance, possible to proceed from the fact that the previous pedagogical literature is representative in our country, and that it includes sufficient quantity of dictionaries, encyclopaedias, and also monographs, forming an objective and suitable basis for the construction of the indexing dictionary and indexing language in the given field, on the basis of comparative studies of the selected work, of the analysis and selection of the fundamental concepts proceeding from the frequency of their occurence, etc. Thus the preparatory work, when the computing technique is suitably applied, can be:

1. the concern of a small team of scientific workers,
2. processed in a comparatively short or at least shorter time,
3. secured at proportionally lower costs, with comparatively smaller risks, and with comparatively better expertness and exactness than in the first above-mentioned case.

As far as the selection of the fundamental work is concerned, dictionaries, encyclopaedias and other items of work, which have to be taken into account in any kind of research, it is necessary to mention in particular explanatory and terminological dictionary in two volumes - the Pedagogical Dictionary. It is a work created by a collective of authors, and published by the State Publishing House of Pedagogical Literature in Prague in the year 1965. It is, at the same time, the first Czechoslovak dictionary in the field of pedagogical sciences published after World War II, in which the authors presented, on the basis of the scientific world outlook, the complex of the most important knowledge concerning education, in particular the communist education. It may be even noted that the Pedagogical Dictionary includes the selection of entries already with regard to the specification of the pedagogical terminology, and that it contributes in practice to the development of the contemporary educational theory. After twelve years since its first edition, it should be stated that on the whole it has not become obsolete, and that it is a very necessary and desirable aid in the field of pedagogical sciences.

In the case that this dictionary would serve as the fundamental work in creating the indexing dictionary, it would be of course necessary to supplement its wordlist by some newly introduced forms and domains of the pedagogical theory and practice, as, for instance, the adult education, and instruction, permanent or lifelong education, and other things. The approach would be the same as that to the preparation of the second edition of the Terminological Dictionary of Informatics and Pedagogy, being prepared for publication this year by the Institute of Educational Information at the Ministry of Education of the Czech Socialist Republic in Prague. The Dictionary includes altogether 1,200 descriptor headings, which are introduced in four languages /in Czech, English, Russian and French/. This number of headings already approaches the required limit of an indexing dictionary of the thesaurus-type and, consequently, could also be used for this purpose.

From other important works, on the one hand general dictionaries and encyclopaedias, as are the Concise Encyclopaedic Dictionary, published by the Publishing House of the Czechoslovak Academy of Sciences in the year 1962, and on the other hand, also the first great work published in the post-war years, by a collective of Czech authors, which has been published under the title Pyramid as a paperback series, by the Slovakopress Publishing House in Bratislava, since the year 1970, etc., should be mentioned here.

With regard to the fact that also the knowledge from other scientific branches, as for instance the psychology, sociology, anthropology, medical sciences, and others, is applied to the field of education, also the fundamental literature from these branches should be taken into account. One of the most comprehensive contemporary works in this sphere is the encyclopaedic lexicon, called ABC on Man, which was published by the Orbis Publishing House in Prague, in the year 1977, and also a number of others, previously published dictionaries and monographs.

The question of creating indexing word-books, dictionaries and the indexing language is of fundamental, crucial importance, from the viewpoint of the gradual and complex establishment of the information system in the field of pedagogical sciences in the C.S.S.R. Without this stage of work neither the optimisation of information outputs, nor the overall improvement of quality and the development of the information systems designed for the managerial sphere and the managerial workers in the field of education, in general, nor the effective utilisation of pedagogical, as well as social and natural-science knowledge in general, in the educational activities themselves or in research, which is the fundamental criterion of its selection, would be possible.

PUBLICATION ACTIVITIES OF THE DEPARTMENT OF SCIENTIFIC AND TECHNICAL INFORMATION AT THE INSTITUTE OF EDUCATIONAL INFORMATION IN BRATISLAVA

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The Department of Scientific and Technical Information fulfils the function of subject-oriented information centre /SOIC/, on the basis of recently approved statute, and its operation concerning the field of information on university education is state-wide. It is also entrusted with the function to coordinate and methodically manage the activities of all the subject-oriented and basic information centres within the Ministry of Education of the Slovak Socialist Republic.

This Department has gradually built up selective information holdings from both domestic and foreign sources, which has enabled it to start with the publication of periodicals concerned with problems of scientific and technical information from the field of education. The Department elaborates and prepares for publication six information bulletins. It also publishes further pedagogical information on the development of education and pedagogical sciences in the C.S.S.R., in the socialist and other countries /e.g. in the form of collections of papers or information retrievals/. It also carries out extensive translation services. At present, it focuses its attention first of all on the elaboration of domestic and foreign information, in accordance with the needs of realization of the project of the Czechoslovak educational and instructional system. In its activities it cooperates primarily with the Slovak Pedagogical Library in Bratislava and with the Institute of Educational Information in Prague. As far as the generation and exchange of educational information, primarily in the form of papers, is concerned, it cooperates also with educational information centres in the C.M.E.A. member countries and with the International Bureau of Education /BIE/ in Geneva.

The Department participates also in the work upon the state research task: Projecting of the Sector System of Scientific and Technical Information in the Field of Education, the Institute of Educational Information at the Ministry of Education of the Czech Socialist Republic in Prague being in charge of the project. The Department will also participate in creating centres of scientific and technical information, in developing activities of subject-oriented information centres, and in optimising the information outputs of the scientific and technical information for the managerial and research workers during the 6th Five-Year Plan.

Periodical publications, informational bulletins, are in the foreground of the informational activities of the Department. We consider the periodical Abstract Papers to be the most significant one. We publish specifically only abstracts from foreign information sources in this bulletin, namely abstracts from journal articles and books from the field of education. For many reasons we have employed the principle of adapting the already elaborated foreign abstracts and reviews published in various foreign periodicals and publications. We consider the selected abstracts from the viewpoint of their applicability to our purposes, we translate them into Slovak, and then adapt them for publication, according to the determined principles. We consider the method of taking over ready-made foreign abstracts to be most suitable at present, because we have a lack of highly qualified experts, who themselves would elaborate the abstracts from the above--mentioned foreign sources. We envisage the gradual creation of the system of information exchange in the form of abstracts between the individual countries, which will contribute substantially to the perfection of knowledge of the information users.

We do not adapt abstracts from the domestic sources. Here, we proceed from the fact that these materials are easily available to all domestic users of information, and their utilisation is not connected with the language barrier. Contrariwise, we are convinced that we provide an important service when making accessible to the users foreign pedagogical literature in the form of abstracts in their native language. This standpoint has already been appreciated by many users of the Abstract Papers. By means of this periodical they learn valuable information on materials in various foreign languages, which would otherwise be inaccessible for them. At the same time, it is of a great importance that every abstract from our periodical substitutes in most cases the reading of the original source, because we proceed in the selection of abstracts from the principlo that every single abstract has to reflect the essence of the primary document - the author's conception, methods of research, results achieved, conclusions, and proposals.

For the entries of necessary bibliographical data we use special forms constituting the first page of every abstract, and being arranged in such a way that they could be used for the preparation of the corresponding punched cards with the introduction of the automated information processing. It will be possible to complete the descriptors only after the elaboration and approval of the thesaurus for the field of pedagogical information. We divide the abstracts according to the topics into individual groups, corresponding with the groups of the demarcated fields of operation for the subject-oriented information centres in the departments of education in the C.S.S.R. Moreover every abstract is classified according to the Universal Decimal Classification /UDC/. The Bulletin is published four times a year.

The Departmental Bibliographical Bulletin represents another important periodical. The Department of Scientific and Technical Information cooperates in its preparation with the Slovak Pedagogical Library, which carries out the corresponding editorial work, and elaborates a substantial part of the entries. A significant feature of this Bulletin is that also other centres of pedagogical information in the sphere of the Ministry of Education of the S.S.R. participate in its preparation. This is the way how the cooperation of information centres in this field is being realised - on the basis of the mutually agreed division of labour. The undesirable duplicities in the elaboration of pedagogical literature are also eliminated. That is the first step in reaching the goal so that gradually all the information centres and libraries of schools and other pedagogical institutions should participate in the work on other information bulletins, published subsequently by the Institute of Educational Information in Bratislava, for the needs of the whole field of education.

The Departmental Bibliographical Bulletin presents document entries with annotations of articles appearing in pedagogical periodicals from all over the world, as well as some kinds of specialised literature. It is published in a form of loose pages with two entries on one page, which makes it possible that these entries can be used directly in the library card catalogue, after being cut in half. From the current year onwards the Bulletin is divided into two parts: one containing information on the domestic educational literature, the other one on foreign educational literature. This periodical is published twelve times a year, with one issue containing approximately 400 entries.

The Bulletin of Trips Abroad, another periodical of the Ministry of Education of the S.S.R., offers a survey of trips abroad of the workers of the Ministry of Education of the S.S.R. within the corresponding period. It contributes to more profound utilisation of information acquired abroad during the personal visits to the individual countries. It is elaborated in a similar way as the Departmental Bibliographical Bulletin, i.e. in the form of annotated document entries on loose pages. It is published twice a year. The individual travel reports are deposited in the holdings of the Institute of Educational Information, and those interested can borrow them.

Information from the field of pedagogical sciences and the corresponding research is covered by two periodicals. The first one is called The Survey of Research Reports and Defended Dissertation Theses in the Field of Pedagogical Sciences in the Sphere of the Ministry of Education of the S.S.R., in which information is recorded on special forms, which have been elaborated in accordance with the directive of the Federal Ministry of Technical and Investment Development - "On the Registration of Research Reports and Defended Dissertation Theses". Every form represents information on one research report or dissertation thesis, in the form of extended annotation, thus enabling the maintenance of a registration and documentation card index. This survey is published once a year.

We publish similar information as in the previous periodical, but from the foreign sources, in the other periodical entitled The Survey of Research Reports and Dissertation Theses from the Pedagogical Sciences in the C.M.E.A. Member Countries. The basis for this bulletin is the Abstracts Collection of the Scientific and Research Work, published periodically by the International Centre of Scientific and Technical Information in Moscow, as the principal body of the International Specialised Information System on Scientific and Research Work. We take over from this bulletin the first series, covering the thematic group called Pedagogy, Education and Instruction. The entries, purposefully selected from the Collection, are translated into Slovak, and also recorded on the special forms. By using this method, similar to that one used in elaboration of the Abstract Papers, we make accessible to the information users materials concerning the educational field, which would be otherwise unavailable to them. This periodical is published twice a year.

The last periodical, elaborated by the Department of Scientific and Technical Information, bears the title Advance Information. It contains basic data on educational systems, education and instruction in countries all over the world, reports on various professional events, and the selection of the most important educational laws and regulations. It is published minimally six times a year.

In conclusion, we should mention also the fact that we have further expanded our cooperation with the Institute of Educational Information in Prague, when preparing these information bulletins. To be concrete - we will unify the individual bulletins, from the viewpoints of both content and form, we will produce them from entries of both departments, and distribute them to the information users within the entire Czechoslovak Socialist Republic. We strive for eliminating duplicities, for attaining a rational division of labour, as well as the dissemination and improvement of information extended to the educational workers in both departments of education in our country.

CONCLUDING SPEECH

OF THE DIRECTOR OF THE COLLOQUIUM

Július Lihocký, Director of the EDICO-2 Colloquium

Esteemed colleagues,
esteemed guests!

We have included very demanding objectives and tasks in the agenda of the EDICO-2 Colloquium.

May be I am not speaking only for myself and for my nearest collaborators, when I say that the exactingness of objectives of the Colloquium evokes in us certain fears, namely whether we achieve positive objectives in our approach to implementing the Helsinki Final Act in our sphere with such a broad international representation.

The course of discussions at the Colloquium, as well as the unanimously adopted Final Protocol, attest to the fact that such anxieties have been groundless. We can say that results have justified the efforts. The EDICO-2 Colloquium, which since the very beginning has been guided by the spirit of principles accepted by 33 countries of Europe, the U.S.A. and Canada in Helsinki, represents a further significant contribution to the development of the information activities at the national level, a contribution to the development of international cooperation in the exchange of scientific and pedagogical information.

The basic papers and statements made by Mr. J. Kiss, Deputy Minister of Education of the Slovak Socialist Republic, and Dr. Leo Fernig, Director of the UNESCO-BIE, created a wide basis for discussions, which have been characterised by creative and fundamental approach to the solution of very complex problems concerning scientifico-pedagogical information as well as its international exchange.

On the forum of this Colloquium and also in informal discussions, delegates of the individual countries have unselfishly conveyed their national experiences regarding the development of information activities in the field of education, instruction and training.

The initial self-restraint and bashfulness, characterizing usually the beginning of every international event, have been quickly bridged. There has been created a friendly atmosphere at the Colloquium, an atmosphere of mutual confidence and respect. On the basis of the Helsinki Final Act we have found quickly a common language, which has been demonstrated in putting through objectives of concrete international cooperation in the exchange of scientifico-pedagogical information. Thus we can enrich ourselves mutually in the education of the young generation of Europe, struggling for a lasting peace and cooperation among nations.

If we stated at the beginning of the Colloquium that the spirit of Helsinki victoriously works its way forward in the lives of European nations, we can also state that this spirit has become prevalent also in the discussions of the Colloquium.

We have exchanged our professional experiences and opinions on the solution of complex questions regarding the development of informational activities and the international exchange of information and cooperation in this field. We have become better acquainted, we have established new friendly contacts, which we regard to be of a great value for the further progressive development of our suççessful cooperation.

Negotiations at the Colloquium have again shown what a very significant role is played by the scientifico-pedagogical information for the systematic democratic development of education and instruction. The Colloquium drew attention to the complexity of the investigated problems, as well as to many theoretical, methodical and practical questions at the national level, which are still open and which are reflected also in the sphere of the international cooperation.

The determination to solve all the problems, and, at the same time, to make use of the international experiences, has been reflected in the papers of many delegates.

All these facts create genuine conditions for the successful implementation of the programme adopted in the Final Protocol.

Because of its contents, the Final Protocol is very significant and valuable, since it is the culmination of our common efforts during the preparations, and proceedings of the Colloquium. This attests to the responsibility and strivings with which we have approached the consideration and solution of the set objectives and tasks, so that our work could contribute ultimately to the realization of principles of the Helsinki Final Act.

And this is what we consider in the first place to be the principal contribution by the EDICO-2 Colloquium.

Being aware of the well-done work we can submit the Final Protocol adopted by the Colloquium, through the Director General of UNESCO, to the 36th Session of the International Conference on Education and Instruction to be held in Geneva, from July 30th to August 8th, 1977.

The Preparatory Committee, headed by Mr. J. Kiss, Deputy Minister of Education of the Slovak Socialist Republic, has contributed, to a considerable extent, to the successful proceedings of the Colloquium, and so allow me to express my gratitude to him from this floor.

UNESCO-BIE, and in particular its Director Dr. Leo Fernig and Mrs. Aida Furtado have participated to a great extent since the very beginning in the preparations of the Colloquium and I wich to thank them very much for their work.

I wish to extend our thanks also to the Czechoslovak Commission for Cooperation with UNESCO, in particular to Dr. Řezáč for his assistance.

Our thanks are also addressed to the representatives of international organizations for their active participation in the Colloquium.

The Working Chairmanship has also contributed to a great extent to the high standard of negotiations of the Colloquium and I wish to express sincere thanks to its members for their exemplary cooperation.

A valuable contribution to the completion of fruitful negotiations of the Colloquium has been the work of the editorial team, headed by its Chairman V. S. Aransky. We wish to extend our cordial thanks for their work.

Our thanks are addressed also to the delegates of the member countries for their papers, by which they have enriched the proceedings of the Colloquium and contributed to the fulfilment of its objectives.

I wish to thank to the Czechoslovak participants of the Colloquium, who have read their speeches, and also to those, who have been unable to do so for the lack of time.

Allow me to express my gratitude to the members of the Organizational Commission and to the Conference and Interpretation Service for their devoted work with which they have contributed to the successful proceedings of the Colloquium.

When concluding the negotiations of the Colloquium, allow me to express my conviction that the EDICO-2 Colloquium has fulfilled the anticipated objectives. It has become, in a number of international events, an important link in the implementation of the Helsinki Final Act in the sphere of exchange of scientifico-pedagogical information, and in the development of international cooperation.

In accepting the Final Protocol, we have created a basis for the gradual positive and creative realization of the jointly accepted tasks.

FINAL PROTOCOL

OF THE COLLOQUIUM EDICO-2

INTRODUCTION

1. The European Colloquium EDICO-2 on the exchange of educational information was held in Bratislava from July 12th to 14th 1977 at the invitation of the Czechoslovak National Commission for UNESCO, with the support of UNESCO. Responsibility for organizing the Colloquium lay with the Slovak Institute for Educational Information, Bratislava.

2. The Colloquium was opened in the morning of July 12th 1977 by the Deputy Minister of Education of the Slovak Socialist Republic.

3. The Colloquium was attended by 25 invited specialists from 21 countries and by observers from UNESCO, Council for Mutual Economic Assistance, Council of Europe 20 and institutions and nongovernmental organizations /see annex 1 - list of participants/.

4. The Colloquium elected as its rotating Chairmen:

Leo Fernig - Director of UNESCO-BIE

Willem de Regt - Director of Central Centre of Documentation, The Hague

Violetta Mircheva - Scientific Secreatry of the Research Institute of Education, Sofia

Ferenc Arató - Director General of the National Library of Education and Museum of Education Budapest

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Horst Roche - Secretariat of the Constant Conference of the Ministers of Education and Culture GFR, Bonn

P.S. Solntsev - Representative of the International System of Information for Social Sciences of the COMECON countries /MISON/

Július Lihocký - Director of the Institute of School Information in Bratislava

Jaroslav Kugler - Director of the Institute of School Information in Praha

It appointed a Drafting Committee composed of:

V. Aranskij - Deputy Director of the Research Institute of General Pedagogy APV USSR Moskva

Aida Furtado - Head of Department of Documentation UNESCO-BIE in Geneva

Raina Todorova - Director of the Centre of Educational Information at the Institute of Education in Sofia

Hannelore Berg - Board of Management of Educational Information of APV GDR Berlin

Kjell V. Rotnes - Director of the University Library Oslo

Elin Ekman - Head of the National Psychologically-Educational Library in Stockholm

Ružena Klečánková - Deputy Director of the Institute of School Information Praha

5. This document, containing the general conslusions of the sessions was prepared by the Drafting Committee and was approved by the participants of the Colloquium.

PART A -GENERAL CONSIDERATIONS

6. The European Colloquium EDICO-2, held from 12th to 15th July 1977 in Bratislava - Czechoslovak Socialist Republic, considered the many advances in information activities within the European countries and the present state of the international exchange of information as a basis and foundation for further development in European collaboration in the field of education.

7. The future development of human society in the context of the scientific technical revolution, in dependence on an increased standard of education for the population. Advances in science and technology, education and improved qualification of manpower have become key factors in the increase of material production and in a consistent growth of material and cultural values of the population. This process requires continuous advances in education and expansion and intensification of the democratization of the educational system.

8. One of the principle conditions for the acceleration of the development of education is a well functioning documentary information system on education according to UNESCO definition.

9. Favourable conditions were created in Europe after the Helsinki Conference for a continuous improvement of the exchange of educational knowledge and experience, with a consequent positive effect on the quality of education and democratization of the educational system.

10. In the Helsinki Final Act on peace, security and cooperation in Europe, which the participants of the Colloquium EDICO-2 unanimously acknowledge, the States pledged: "To contribute to further development of exchange of knowledge and experience, as well as to the contacts between organizations and factors ... and to support the exchange of experiences in the methods of teaching used on all levels of the educational system ..., as well as the exchange of teaching materials".

11. The Colloquium based its work on the principles of the Helsinki Final Act and its effort to contribute to the mutual understanding and trust of nations and to the mutual friendship and good neighbourly relations by the way of meetings and mutual exchange of experiences in the field of education. The Colloquium applauded the spirit of Helsinki, particularly the emphasis on cooperation in the field of educational information via mutual agreements, respecting the national sovereignity of the member countries.

12. The basic aims of the Colloquium EDICO-2 were as follows:

- exchange of experiences in the building up of information systems and the development of information activities;
- consideration of the present state of the international exchange of educational information, as well as of its likely further development;
- determination of the priority issues in the exchange of information, its organization, forms and methods.

Educational documentation and information

13. The participants of the Colloquium found that almost all countries of Europe are presently engaged in the improvement of their respective educational systems and methods of teaching. One of the most important conditions for progress is early and adequate information exchange at national and international levels. Information influences the management and administration of education systems, scientific research and improvement of methods and forms of educational and teaching processes.

14. The participants note that in the majority of European countries the national information systems and centres operate on the basis of national policies of information: These policies influence significantly the processes of innovation in the educational system. Both systems and centres mostly focus their work on educational research.

15. Methods and forms of distribution of information are being systematically improved and computer techniques are more and more frequently being applied.

16. Arrangements are also gradually being developed for international exchange of information and cooperation on bilateral and multilateral bases.

17. The participants of the Colloquium are unanimously of the opinion that of the bases for functional and purposeful exchange of information consists of well-established national information systems. The exchange of information and cooperation may be successfully intensified in the spirit of the Helsinki Final Act via national information centres and educational libraries based on the specific character and needs of each country.

18. Experience shows that the flow of information should be realized in a two-way sense. The many-sided functions of information systems require a circulation of information in both vertical and horizontal directions, i.e., a circulation within each country between the national bodies and those of regional and international character.

19. Users of information connected directly and intermediately with education and the educational system ought to know and appropriately evaluate the importance of information. To achieve the speeding up, it is necessary for the users to contribute to the information systems via feedback processes.

20. The participants of EDICO-2 believe that in further development of cooperation, steps should be taken in the following directions:

- a rise in the significance and the coordinating activities international institutions in the field of educational information, particularly UNESCO-BIE and international information centres;
- growth of centres of information and documentation and data banks in individual countries;
- improvement of the quality of information dissemination mechanisms, such as types of documents, analyses, bibliographies abstracts, express information, selective information, retrieval and information reviews;
- improvement, through the use of modern computer techniques, the level of technology of acquisition, processing and dissemination of information;

- analysis of development trends in educational policy on both European and world-wide levels;

- improvement of quality of means and methods of communication between information centres on all levels;

- expert and financial support for the development of this activity on a national scale by international institutions.

RECOMMENDATIONS TO BE SUBMITTED TO THE INTERNATIONAL CONFERENCE ON EDUCATION

21. The participants of the Colloquium EDICO-2, after considering the development of national information systems of scientific educational information and experiences in international information exchange in Europe, have reached certain general conclusions which they recommend to the attention of the 36th session of the International Conference on Education:

a/ a favourable condition is to have a clear and vigorous national policy in the sphere of educational information and to base the system of educational information on it;

b/ to develop national documentation and information centres and infrastructures mindful of the needs of international exchange of information and collaboration;

c/ to create conditions for research on the application of informatics in education;

d/ national information centres or national councils of information centres may be considered as bodies which mediate the flow of information on a national and international scale;

e/ to develop mechanism for incorporating national centres into regional and international networks;

f/ to orient contents of information designed for international exchange especially to basic legislation, reforms, planning, curricula, information on innovation processes and experiments in education, and the results of educational research;

g/ to organise systematic education of information workers and for this purpose convene international meetings and to offer fellowships on a wider scale;

h/ to give attention to training for information users;

i/ to build up international and regional information and documentation centres and to improve the coordination of activities among them;

k/ to unify and gradually standardize the information carries, working methods and means;

l/ to issue basic information materials in the languages of UNESCO on the level of national and international information centres;

m/ to employ the mass media to disseminate information and education;

n/ in the network of national information systems, to increase co-operation between educational libraries and information centres to meet the needs of information users.

Part B:

PROGRAMME OF CO-OPERATION BETWEEN EDUCATIONAL INFORMATION CENTRES IN THE EUROPEAN MEMBER STATES OF UNESCO

22. Bearing in mind the specific conditions in Europe, the above general recommendations need to be further developed. The Colloquium EDICO-2 records the following recommendations:

23. On the basis of various presentations made at EDICO-2, the participants of the Colloquium find that since the session of EDICO-1 /in 1974/, and the Helsinki Conference /1975/, information activity in the field of education at the national, as well as at the regional level, has been expanded and intensified in the majority of European countries.

24. The participants of the Colloquium appreciate the activities of UNESCO and the regional organizations in assisting system interconnections and cooperations between the European Member States of UNESCO.

25. Further development of the exchange of educational information is made more difficult because of procedural and technical problems not yet solved, differences in the structures and the level of information systems, language barriers, and by the fact that there is no all-European system of educational information.

26. It would be desirable for national and international centres information to publish basic information materials in the languages of UNESCO: English, Russian, French and Spanish;

27. The participants of the Colloquium EDICO-2 have come to the conclusion that certain problems, in particular need to be solved for further development of the exchange of educational information by action:

a/ to concentrate efforts on the complex theoretical solution of the problems of scientific educational information,

b/ in the methodical sphere, to generalize from the experiences acquired in the establishment of information systems in the Member States, in order to make widely known methods or models which could further support exchanges and cooperation between the national information systems; to develop more user-needs and information use studies;

c/ in the technical field to generalize experiences from the application of computing, reprographic and communication means in information activities.

28. The participants of the Colloquium EDICO-2, in their unanimous effort to create conditions for general development of the international information exchange and collaboration of national information systems, and in this connection make the following recommendations:

a/ within the framework of UNESCO-BIE,

i/ to consider possibilities of establishment of an all-European system of scientific-educational information at UNESCO. For this purpose working groups consisting of the representatives of national and international information centres should be formed; these are expected to submit suggestions of theoretical, methodical solutions of problems for the establishment of an all-European system of scientific-educational information for the sessions of EDICO-3,

ii/ to create better conditions for improvement and expansion of the information activity of the existing European centres of UNESCO,

iii/ to consider possibilities and to create conditions for completion of a network of European educational information centres,

iv/ to improve the existing conditions for regular publication of a abstract journal which would deal with information from the fields of educational policies and organization of school systems in the European Member States of UNESCO, as well as the information bulletin which deald with the exchange of experiences concerning building up and development of national information systems and exchange of educational information. Member States should contribute regularly to these journals,

v/ to create conditions for organization of international seminars for information workers on theoretical, methodical and technical problems concerning the establishment of information systems and to provide fellowships more extensively.

b/ On the level of national information systems, to create conditions for exchange of information, particularly in the following fields:

i/ basic legal measures regulating the development of the educational system and of education towards democratization,

ii/ processes of innovation and development of education, iii/ forms and methods of adult education,

iv/ results of basic educational research,

v/ curricula and syllabuses for all types of schools,

vi/ experiences form innovation in didactic methods and techniques.

c/ The participants of the Colloquium believe that the Colloquia EDICO have fulfilled their mission and have become an important mean for the international exchange of experiences and for closer mutual contacts between centres of the Member States; therefore they suggest that the EDICO Coloquia should become a permanent programme of UNESCO-BIE with the active assistance and collaboration of the national commissions of UNESCO.

29. The participants in EDICO-2 address the above mentioned recommendations as follows:

a/ the Czechoslovak Commission for UNESCO is requested to draw the suggested programme to the attention of National Commissions in the European Region,

b/ the Director General of UNESCO is requested to convey the suggested programme to the Ministers of Education of the Member States of UNESCO in Europe, for them to investigate the possibility of realisation on the national scale, and to examine how the international aspects may be accommodated in the UNESCO-BIE programme,

c/ the Director General of UNESCO is requested to distribute the suggested programme to the participants of the 36th session of the International Conference on Education.

Bratislava, July 14, 1977

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